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RSVP UPGRADE AND MAINTENANCE.(U)
DEC 81 J WEBSTER N00014-78-C-0818
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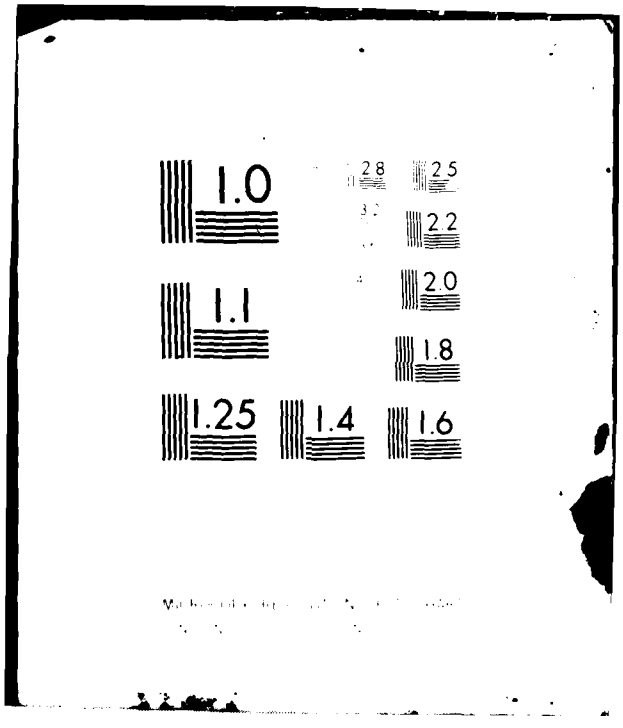
1.0
2.8
2.5
2.2
2.0
1.1
1.8
1.25
1.4
1.6

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Prepared for

Naval Ocean Research and Development Activity
NSTL Station, Mississippi

Prepared Under
Contract No. N00014-78-C-0818
ODSI Project 1100

RSVP UPGRADE AND MAINTENANCE

Final Task Report

December 18, 1981

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Prepared by

Jacqueline Webster
Ocean Data Systems, Inc.
Rockville, Maryland

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FOREWORD

This document is a final task report for the RSVP Upgrade and Maintenance Task completed under Contract No. N00014-78-C-0818 for the Naval Ocean Research and Development Activity.

The RSVP system retrieves sound speed profiles from a modified NODC (National Oceanographic Data Center) data base, and determines representative profiles from the retrieved profiles. These representative profiles are then used for oceanographic analysis, including acoustic modeling.

Under this task, modifications were made to the computer programs in the RSVP system to make them easier to use. This task also included conversion to new computer facilities, data base maintenance, and documentation of an existing undocumented program.

This document is in three parts. The first part describes the improvements made to the RSVP retrieval program. The second part is the documentation of the RSVP plotting program. The third part is a description of the Cyber Control Language procedure that is used to run the RSVP system.

ODSI thanks Eigoro Hashimoto formerly of NORDA Code 320 and George Kerr of NORDA Code 321 for assistance with program specifications and for furnishing an environment conducive to completion of this task.

OCEAN DATA SYSTEMS, INC.

Memorandum

To: Dr. A. Anderson (Head - NORDA Code 320)

From: Jacqueline Webster

Date: 30 June 1980

Subject: Upgrade of the RSVP System

The RSVP system retrieves sound profiles from a modified and reformatted NODC ocean station data base, and determines representative profiles from among those that are retrieved. The representatives are then used as input to acoustic modelling programs and for other oceanographic analysis. Under Contract No. N00014-78-C-0818, modifications were made to two of the programs in the system, RSVP and RSVPPLP. These modifications are summarized as follows:

Changes to RSVP

1. Automation of the procedure whereby deep ocean sound speeds are retrieved. Deep ocean sound speeds are now automatically retrieved from a disk file rather than manual user selection from a punched card deck being required.

2. Extension of the summary of sound speed profiles by year from 1974 to 1999.

3. Addition of parity error checking on input of sound speed profiles.

4. Clarification of printer output.

5. Addition of a new format for disk output (used as input to program RSVPPLP).

Changes to RSVPPLP

1. Increasing the flexibility of input specifications.

2. Addition of new features to the plotter output and making it more general.

3. Uncovering and correction of program errors.

4. Modification of the card output to standard FACT format.

Attached is documentation of the changes made to RSVP along with instructions for its use.

Documentation of RSVPPLP, prepared as part of the work performed under the previously mentioned contract, appears as a separate task report. RSVP is documented in:

> AESD Sound-Speed Profile Retrieval System (RSVP), AESD Technical Note TN-74-03, October 1974, John J. Audet, Jr. and Gregory G. Vega.

cc: Eigoro Hashimoto - NORDA Code 320
Gilbert Jacobs

I. Changes to program RSVP

I.1 Archival deep sound speeds

The RSVP system uses archival deep sound speeds to determine critical depth where available data are not sufficiently deep, and to extend sound speed profiles when specified by the user. Previously, the RSVP user had to find the appropriate card containing the deep sound speeds from a card file, duplicate it and manually insert it in his input deck. The program has been modified so that the deep sound speeds can be specified in one of three ways:

1. The deep sound speeds can be specified on a punched card, as before.

2. The Marsden square number and quadrant are calculated by the program, and then used to search for matching deep sound speeds in a disk file.

3. The Marsden square number and quadrant can be specified by the user on punched card input. These are then used to obtain the matching deep sound speeds from the disk file.

The file containing the archival deep sound speeds consists of one record for each Marsden square quadrant. A description of the record follows:

Format	Character Positions	Variable Name	Description
F6.1	1-6*	BLT(I)	Maximum depth in meters for the I-th request area.
10F6.1	7-12,* 13-18, 19-24, . . . 61-66	(SVEXT(J,I), J=1,10)	Archival deep sound speeds in meters/sec for the I-th request area.
I3	69-71**	LMSQ	Marsden square number.
I1	73	LMSQ5	Quadrant number.

* The value is placed anywhere in the positions specified with the decimal point expressed.

**The value is right-justified in the positions specified with no decimal point.

I.2 Summary by Year

The printed output from RSVP contains a count of the number of profiles in the area of interest for each 5-year period between 1900 and 1974. Added to this summary is a count of the profiles between 1975 and 1999. This was done in preparation for the updates that will be made to the sound speed data base.

I.3 Parity Errors

In the previous version of RSVP, a hardware error encountered on reading the sound speeds was treated in the same way as an end-of-data. Thus a bad tape or disk could cause a user to assume that there was no data in the area, when there actually was data there. The current version of RSVP prints on error message and aborts the job.

I.4 Printer Output

The headings in the printer output from RSVP were modified in order to make it easier to see what data were available in the data base, and what data were selected for analysis. A sample of the RSVP printer output is presented in Section II.4.

I.5 Disk Output

The previous version of RSVP wrote all the printer output to a disk file for use by the next program in the system, RSVPPLP. This file used more disk space than necessary, causing a shortage of scarce disk storage when the RSVP system was used in preparing for an exercise. Therefore, the disk file output from RSVP was changed to a simpler more compact version.

The disk file consists of sets of sound speed profiles retrieved by RSVP as well as information used in retrieval of the profiles. Each set in this file is the output from one request (by ocean location and time of year) to program RSVP. There is a maximum of 16 sets per file.

Each set in the file consists of one record each of Types 1-4, followed by 35 records of Type 5 as described on the following pages. Record Types 1-4 are images of the original request specification input to program RSVP. Records of Type 5 contain the sound speed profiles that were retrieved by RSVP as a result of the request shown in Records 1-4.

A description of the five record types follows.

Record Type	Format	Character Positions	Variable Name	Description
1	6A10	1-60	(REQT(K,I), K=1,6)	Up to 60 alphanumeric characters for an identifying title and a date for the I-th request.
	I2	78-79**	I	Request number (1 - 16).
	I1	80	ISEQ	Record type number, equal to 1.
2	I2	1-2**	LL(1,I)	Degrees of lower latitute
	I2	4-5**	LL(2,I)	Minutes limit of search
	A1	7	LL(3,I)	Hemisphere area for I-th request.
	I2	10-11**	LL(4,I)	Degrees of upper latitude
	I2	13-14**	LL(5,I)	Minutes limit of search
	A1	16	LL(6,I)	Hemisphere area for I-th request
	I3	21-23**	LL(7,I)	Degrees of lower longi-
	I2	25-26**	LL(8,I)	Minutes tude limit of
	A1	28	LL(9,I)	Hemisphere search area for I-th request
	I3	31-33**	LL(10,I)	Degrees of upper longi-
	I2	35-36**	LL(11,I)	Minutes tude limit of
	A1	38	LL(12,I)	Hemisphere search area for I-th request.
	I3	50-52**	LMSQ	Marsden square number and quadrant number used by RSVP to look up the deep sound speeds in the archival file. If blank, deep sound speeds are specified by INDM below.
	I1	54	LQUAD	
	A1	55	INDM	If LMSQ and LQUAD above are specified, INDM is disregarded. If INDM is "M", the Marsden square and quadrant are calculated from latitude and longitude. If INDM is blank, deep sound speeds are entered from cards of type 4.
	I2	78-79**	I	Request number (1-16)
	I1	80	ISEQ	Record type number, equal to 2.

*The value is placed anywhere in the positions specified with the decimal point expressed.

**The value is right-justified in the positions specified with no decimal point.

Record Type	Format	Character Positions	Variable Name	Description
3	12(I2,1X)	1-2,** 4-5, 7-8, ⋮ 34-35	(ISN(M,I), M=1,12)	Month numbers (01-12) used in data search for I-th request.
	I4	38-41**	IY(I)	Earliest year used in data search for I-th request.
	I4	44-47**	MIND(I)	Minimum search depth in meters for I-th request.
	F4.0	50-53*	XSONIC(I)	Maximum search depth in meters of sonic layer for I-th request.
	F4.0	56-59*	SSXMIN(I)	Minimum search depth in meters of subsurface maximum for I-th request.
	I2	78-79**	I	Request number (1-16)
	I1	80	ISEQ	Record type number, equal to 3.
4	11F6.1	1-6*	BLT(I)	Maximum bottom depth in meters for the Marsden square quadrant.
		7-12,* 13-18, ⋮ 61-66	(SVEXT(J,I), J=1,10)	Archival deep sound speeds in meters/sec. used to extend profiles for the I-th request.
	I3	69-71**	MSQ	Marsden square number for archival deep sound speeds.
	I1	73	MSQ5	Marsden square quandrant.
	I2	78-79**	I	Request number (1-16)
	I1	80	ISEQ	Record type number, equal to 4.

There is one record of each of Types 1-4, representing an RSVP request.

*The value is placed anywhere in the positions specified with the decimal point expressed.

**The value is right-justified in the positions specified with no decimal point.

Record Type	Format	Character Positions	Variable Name	Description
5	I2	9-10**	J	Sequence number (1-35) for sound speed profile point.
	I5	16-20**	LDEPTH(J)	Depth in meters at J-th sound speed profile point.
	F6.1	25-30*	RPROF(J)	Sound speed in meters/sec. at the J-th depth for the model (most typical) profile.
	F6.1	35-40*	SVLM(J,I)	Mean sound speed in meters/sec. at the J-th depth, for all profiles selected for the I-th request.
	F6.1	44-49*	SVMIN(J,I)	Minimum sound speed in meters/sec. at the J-th depth, for all profiles selected for the I-th request.
	F6.1	53-58*	SVMAX(J,I)	Maximum sound speed in meters/sec. at the J-th depth, for all profiles selected for the I-th request.
	F4.1	67-70*	SVLSD(J,I)	Standard deviation from the mean in meters/sec. at the J-th depth, for all profiles selected for the I-th request.
	I5	81-85**	CNT(J,I)	Number of observations at the J-th depth for all profiles selected for the I-th request.
	F6.1 F6.1 F6.1	95-100,* 104-109,* 113-118*	(SVLJ(J,K), K=1,3)	Sound speed in meters/sec. at the J-th depth for the 3 most representative profiles selected for the I-th request.
	I5	123-127**	LDEPTH(J)	Depth in meters at J-th sound speed profile point (repeat of second field above)

*The value is placed anywhere in the positions specified with the decimal point expressed.

**The value is right-justified in the positions specified with no decimal point.

II. RSVP User's Guide

II.1 File Identification

II.1.1. Program Files

The FORTRAN source of program RSVP is stored in the Program Library file PVEHRSVPPL. The binary form of RSVP is stored as file PVEHRSVPLGO. The ID at Eglin is KM, and the ID at NSRDC is PVEH.

II.1.2 Data Files

The archival deep sound speeds are stored on a card-image disk file with the name PVEHDEEPSSARCHIVAL. The ID at Eglin is KM and the ID at NSRDC is PVEH.

At Eglin the sound speed data base is stored on magnetic tape (9-track, labelled, density 800 bpi). At NSRDC the data base is stored on removable disk packs. The data are grouped by geographical area. Following is a table showing file names, tape reel identifiers, and disk pack identifiers for each group of data.

STORAGE MEDIA FOR THE RSVP DATA BASE

MARSDEN SQUARES	AREA	EGLIN TAPES			NSRDC DISK PACKS	
		Original*	Backup	TAPE LABEL	FILE NAME	DISK PACK IDENTIFIERS
008 - 021 045 - 057 083 - 093 120 - 130	CENTRAL PACIFIC	0531	0462	PUJACENPAC	CENPAC	VSN=DV4726, SN=AESD03, ID=PVGV
157 - 164 193 - 200 231 - 235 263 - 278 904 - 926	NORTHERN PACIFIC ARCTIC OCEAN (PACIFIC)	0239	16386	PUJANORPAC	NORPAC	VSN=DV4726, SN=AESD03, ID=PVGV
001 - 006 036 038 - 043 074 - 080 109 - 116 145 - 152	CENTRAL ATLANTIC OCEAN	3826	0774	PUJACENATL	CENATL	VSN=DV4726, SN=AESD03, ID=PVGV
109 141 - 144 178 - 180	MEDITERREAN SEA	0572	4036	PUJAMEDSEA	MEDSEA	VSN=DV4726, SN=AESD03, ID=PVGV
181 - 190 217 - 226 251 - 252 258 - 262	NORTH ATLANTIC OCEAN	0400	6135	PUJANORATL	NORATL	VSN=DV4726, SN=AESD03, ID=PVGV

* The external identifiers listed here are not the same as the internal labels (VSN) because these tapes were created at NSRDC. Therefore the LABEL card used to specify the tape should not contain a VSN.

STORAGE MEDIA FOR THE RSVP DATA BASE

MARSDEN SQUARES	AREA	EGLIN TAPES			NSRDC DISK PACKS	
		Original*	Backup	TAPE LABEL	FILE NAME	DISK PACK IDENTIFIERS
007 - 008 043 - 046 080 - 082 117 - 118	CARIBBEAN SEA	0306	4050	PUJACARIB	CARIB	VSN=DV4726, SN=AESD03, ID=PVGV
022 - 026 058 - 062 094 - 098 131 - 133 165 - 168 201 - 202	PHILIPPINE SEA SEA OF JAPAN SEA OF OKHOTSK	10996	13211	PUJAPHIOKJP	PHIOKJP	VSN=DV4726, SN=AESD03, ID=PVGV
027 - 032 063 - 069 099 - 105 324 - 331 360 - 368 396 - 404 432 - 441 447 - 468 504 - 513 540 - 549 576 - 585	INDIAN OCEAN	5150	0064	PUJAINDIAN	INDIAN	VSN=DV4727, SN=AESD04, ID=PVGV

* The external identifiers listed here are not the same as the internal labels (VSN) because these tapes were created at NSRDC. Therefore the LABEL card used to specify the tape should not contain a VSN.

STORAGE MEDIA FOR THE RSVP DATA BASE

MARSDEN SQUARES	AREA	EGLIN TAPES			NSRDC DISK PACKS	
		Original*	Backup	TAPE LABEL	FILE NAME	DISK PACK IDENTIFIERS
214 - 216 244 - 250 253 - 255 278 - 288 901 - 903 927 - 936	NORWEGIAN SEA ARCTIC OCEAN (ATLANTIC)	5388	0314	PUJAATLARC	ATLARC	VSN=DV4727, SN=AESD04, ID=PVGV
300 - 305 334 - 340 370 - 376 406 - 414 442 - 450 478 - 486 514 - 522 550 - 558 586 - 587 307 - 323 343 - 359 379 - 393 415 - 431 451 - 467 487 - 503 523 - 539 559 - 575	SOUTH ATLANTIC OCEAN SOUTH PACIFIC OCEAN	16382	0448	PUJASATLPAC	SATLPAC	VSN=DV4727, SN=AESD04, ID=PVGV

* The external identifiers listed here are not the same as the internal labels (VSN) because these tapes were created at NSRDC. Therefore the LABEL card used to specify the tape should not contain a VSN.

II.2 RSVP Card Input

A maximum of 16 ocean areas in which it is desired to find typical sound speed profiles can be specified in one RSVP run. For each ocean area specification, referred to as a request, there are up to 4 input cards. Duplicate input cards may be omitted when more than one request is being specified. That is, if an input card in one request is the same as the corresponding type of card for the previous request in the run, then that card may be omitted. A description of the 4 types of input cards to RSVP follows. Sample RSVP input cards appear following the card input description.

Card Type	Format	Character Positions	Variable Name	Description
1	6A10	1-60	(REQT(K,I), K=1,6)	Up to 60 alphanumeric characters for an identifying title and a date for the I-th request.
	I2	78-79**	I	Request number (1 - 16).
	I1	80	ISEQ	Card type number, equal to 1.
2	I2	1-2**	LL(1,I)	Degrees of lower latitute
	I2	4-5**	LL(2,I)	Minutes limit of search
	A1	7	LL(3,I)	Hemisphere area for I-th request.
	I2	10-11**	LL(4,I)	Degrees of upper latitude
	I2	13-14**	LL(5,I)	Minutes limit of search
	A1	16	LL(6,I)	Hemisphere area for I-th request
	I3	21-23**	LL(7,I)	Degrees of lower longi-
	I2	25-26**	LL(8,1)	Minutes tude limit of
	A1	28	LL(9,I)	Hemisphere search area for I-th request
	I3	31-33**	LL(10,I)	Degrees of upper longi-
	I2	35-36**	LL(11,I)	Minutes tude limit of
	A1	38	LL(12,I)	Hemisphere search area for I-th request.
	I3	50-52**	LMSQ	Marsden square number and quadrant number used by RSVP to look up the deep sound speeds in the archival file. If blank, deep sound speeds are specified by INDM below.
	I1	54	LQUAD	
	A1	55	INDM	If LMSQ and LQUAD above are specified, INDM is disregarded. If INDM is "M", the Marsden square and quadrant are calculated from latitude and longitude. If INDM is blank, deep sound speeds are entered from cards of type 4.
	I2	78-79**	I	Request number (1-16)
	I1	80	ISEQ	Card type number, equal to 2.

*The value is placed anywhere in the positions specified with the decimal point expressed.

**The value is right-justified in the positions specified with no decimal point.

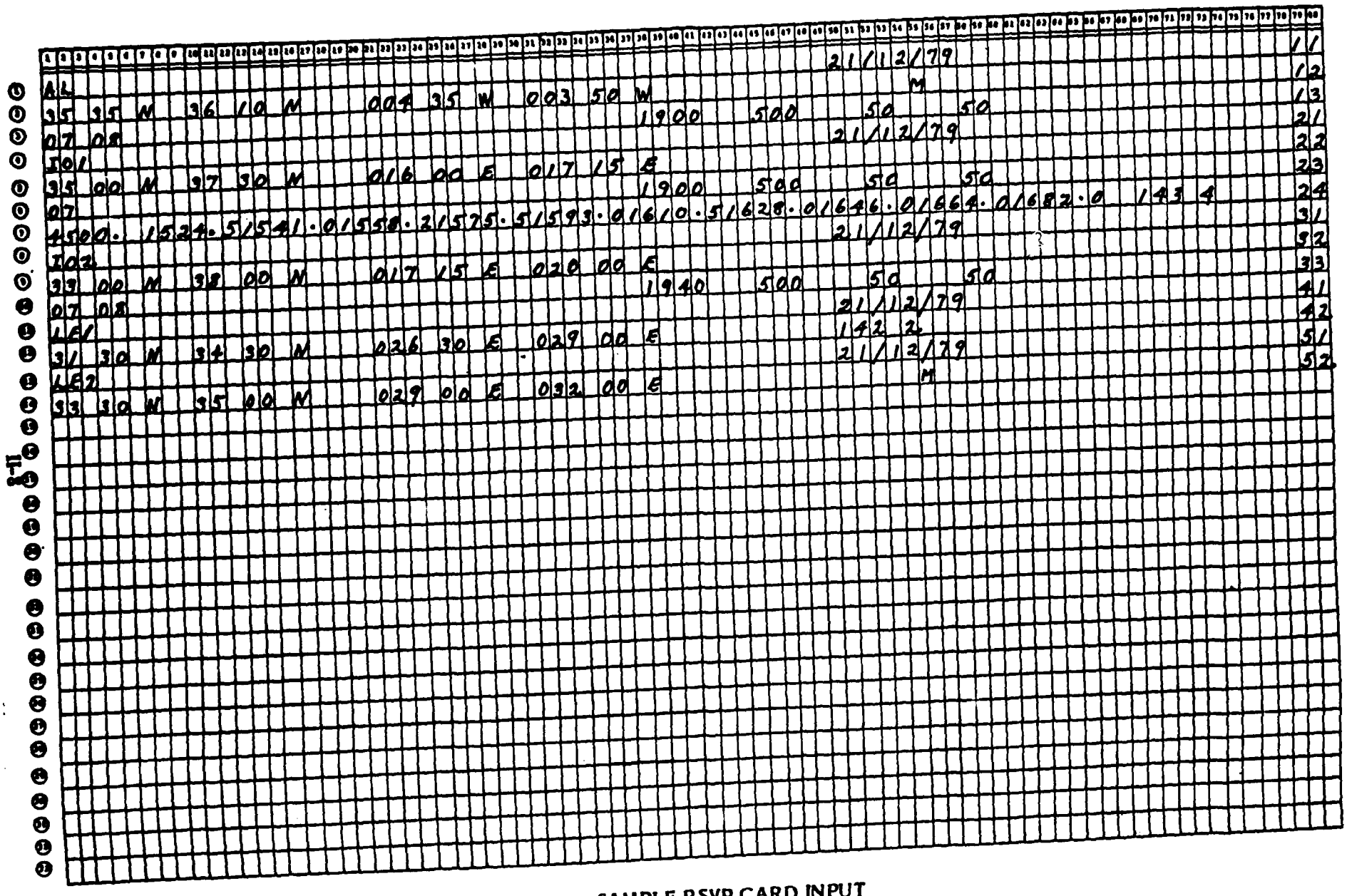
Card Type	Format	Character Positions	Variable Name	Description
3	12(I2,1X)	1-2,** 4-5, 7-8, : : 34-35	(ISN(M,I), M=1,12)	Month numbers (01-12) used in data search for I-th request.
	I4	38-41**	IY(I)	Earliest year used in data search for I-th request.
	I4	44-47**	MIND(I)	Minimum search depth in meters for I-th request.
	F4.0	50-53*	XSONIC(I)	Maximum search depth in meters of sonic layer for I-th request.
	F4.0	56-59*	SSXMIN(I)	Minimum search depth in meters of subsurface maximum for I-th request.
	I2	78-79**	I	Request number (1-16)
	I1	80	ISEQ	Card type number, equal to 3.

Cards of type 4 are omitted when the archival deep sound speeds are to be obtained from the disk file, that is, when columns 50-55 on the type 2 card are blank.

4	11F6.1	1-6*	BLT(I)	Maximum bottom depth in meters for the Marsden square quadrant.
		7-12,* 13-18, : : 61-66	(SVEXT(J,I), J=1,10)	Archival deep sound speeds in meters/sec. used to extend profiles for the I-th request.
	I3	69-71**	MSQ	Marsden square number for archival deep sound speeds.
	I1	73	MSQ5	Marsden square quandrant.
	I2	78-79**	I	Request number (1-16)
	I1	80	ISEQ	Card type number, equal to 4.

*The value is placed anywhere in the positions specified with the decimal point expressed.

**The value is right-justified in the positions specified with no decimal point.



SAMPLE RSVP CARD INPUT

II.3 Sample jobs

II.3.1 Sample Job Deck For Eglin

```
X107,T375,NT1,P4.                          HASHIMOTO     1608  921BVT16H021      26
REQUEST,TAPE60,*PF,SN=USET1.
ATTACH,TAPE4,PVEHDEEPSSARCHIVAL,ID=KM,SN=USET1,MR=1.
LABEL,TAPE1,L=PUJAMEDSEA,R,D=HD.   PHYSICAL REEL NO. 0572
ATTACH,LGO,PVEHRSVPLGO,ID=KM,MR=1,SN=USET1.
LIMIT,2000.
COPYBF,TAPE1,DATIN.
RETURN,TAPE1.
REWIND,DATIN.
LOAD,LGO.
EXECUTE,RSVP,DATIN.
CATALOG,TAPE60,RSVPOUT,ID=KM.
00000000000000000000 <---- 7/8/9 card
AL                                                  21/12/79                    11
35 35 N  36 10 N    004 35 W  003 50 W                   M                      12
07 08                                  1900   500    50    50                   13
I01                                                 21/12/79                    21
35 00 N  37 30 N    016 00 E  017 15 E                                           22
07                                     1900   500    50    50                   23
4500.01524.51541.01558.21575.51593.01610.51628.01646.01664.01682.0  143 4      24
I02                                                 21/12/79                    31
33 00 N  38 00 N    017 15 E  020 00 E                                           32
07 08                                  1940   500    50    50                   33
LE1                                                 21/12/79                    41
31 30 N  34 30 N    026 30 E  029 00 E              142 2                       42
LE2                                                 21/12/79                    51
33 30 N  35 00 N    029 00 E  032 00 E                   M                      52
00000000000000000000 <---- 6/7/8/9 card
```

II.3.2 Sample Job Deck For Carderock

```
PUJAW,CM75000,T300,P3,RP1.
CHARGE,PUJA,IWBGT18919.
ATTACH,LGO,PVEHRSVPLGO,ID=PVEH,PW=HORSE,MR=1.
ATTACH,TAPE4,PVEHDEEPSSARCHIVAL,ID=PVEH,MR=1.
REQUEST,TAPE60,*PF.
PAUSE. JOB USES DISK PACK DV4726
MOUNT,VSN=DV4726,SN=AESD03.
ATTACH,TAPE1,MEDSEA,ID=PVGV,SN=AESD03,PW=MOOSE,MR=1.
LDSET,PRESETA=NGINF.
LGO.
CATALOG,TAPE60,RSVPOUT,ID=PVEH.
0000000000000000000000 <------ 7/8/9 card
AL                                                  21/12/79                    11
35 35 N  36 10 N    004 35 W  003 50 W                   M                      12
07 08                                  1900   500    50    50                   13
I01                                                 21/12/79                    21
35 00 N  37 30 N    016 00 F  017 15 E                                           22
07                                     1900   500    50    50                   23
4500.01524.51541.01558.21575.51593.01610.51628.01646.01664.01682.0  143 4      24
I02                                                 21/12/79                    31
33 00 N  38 00 N    017 15 E  020 00 E                                           32
07 08                                  1940   500    50    50                   33
LE1                                                 21/12/79                    41
31 30 N  34 30 N    026 30 E  029 00 E              142 2                       42
LE2                                                 21/12/79                    51
33 30 N  35 00 N    029 00 E  032 00 E                   M                      52
0000000000000000000000 <------ 6/7/8/9 card
```

II.4 Sample RSVP Printer Output

```
          RSVP INPUT CARDS                                  21/12/79                    11
AL                                                                M                     12
35 35 N  36 10 N    004 35 W  003 50 W                                                  13
                                        1900   500    50    50                          21
07 0A                                                     21/12/79                      22
101                                                                                     23
35 00 N  37 30 N    016 00 E  017 15 E                                                  24
                                        1900   500    50    50                          31
07                                                                                      32
4500.01524.51541.01558.21575.51593.01610.51628.01646.01664.01682.0  143 4               33
102                                                       21/12/79                      41
33 00 N  38 00 N    017 15 E  020 00 E                                                  42
                                        1940   500    50    50                          51
07 0A                                                     21/12/79                      52
LE1                                                       142 2
31 30 N  34 30 N    026 30 E  029 00 E.                   21/12/79
LE2                                                           M
33 30 N  35 00 N    029 00 E  032 00 E
         14   INPUT CARDS WERE READ
```

SAMPLE RSVP OUTPUT (Page 1 of 6)

```
        RSVP DATA CARDS                                  21/12/79                                  11
AL                                                          M                                      12
35 35 N  36 10 N    004 35 W  003 50 W                                                             13
07 08                                                1900   500    50    50
                                                                 21/12/79                          21
I01                                                                                                22
35 00 N  37 30 N    016 00 E  017 15 E                                                             23
07                                                   1900   500    50    50                         24
4500.01524.51541.01558.21575.51593.01610.51628.01646.01664.01682.0  143 4                         31
I02                                                              21/12/79                          32
33 00 N  38 00 N    017 15 E  020 00 E                                                             33
07 08                                                1940   500    50    50                         24
4500.01524.51541.01558.21575.51593.01610.51628.01646.01664.01682.0  143 4                         41
LE1                                                              21/12/79                          42
31 30 N  34 30 N    026 30 E  029 00 E                           142 2                             33
07 08                                                1940   500    50    50
                                                                 21/12/79                          51
LE2                                                                 M                              52
33 30 N  35 00 N    029 00 E  032 00 E                                                             33
07 08                                                1940   500    50    50

THE MARSDEN SQUARES TO CONSIDER FOR PROFILE RETRIEVAL ARE    109 THROUGH  143

END RETRIEVAL AT MARSDEN SQUARE  144
```

SAMPLE RSVP OUTPUT (Page 2 of 6)

AL

21/12/79

SEQ	MSQ	S	ID	LAT	LONG	DATE	STA OBS	BOT D	STA D	SFC SS	LD	SMAX D	AXIS D	AXIS SS	CD	CD SS
1	109	3	53	35 40 N	3 56 W	8/14/57	14 14	0	528	1533.4	0.0	0.0	215.0	1508.6	1704.1	1533.4
2	109	3	54	35 56 N	4 30 W	7/22/62	17 18	0	836	1532.8	0.0	0.0	213.0	1509.0	1668.6	1532.8
3	109	3	54	35 51 N	4 13 W	7/24/53	14 10	0	500	1533.8	10.0	0.0	200.0	1508.9	1727.8	1533.8
4	109	3	54	35 52 N	4 15 W	8/ 3/62	18 15	0	985	1535.2	0.0	0.0	246.0	1509.7	1810.7	1535.2
5	109	3	54	35 40 N	4 15 W	8/ 3/62	18 16	0	940	1536.6	0.0	0.0	235.0	1509.4	1893.5	1536.6
6	109	3	54	35 45 N	4 30 W	8/ 3/62	16 20	0	788	1538.1	0.0	0.0	249.0	1509.3	1982.2	1538.1
7	109	3	54	35 58 N	4 11 W	8/ 1/58	22 13	1362	1319	1534.0	1.0	0.0	190.0	1508.1	1739.6	1534.0
8	109	3	54	35 58 N	4 2 W	8/14/57	16 15	0	765	1532.2	0.0	0.0	430.0	1512.4	1633.1	1532.2
9	109	3	64	36 8 N	4 34 W	7/20/62	15 19	0	615	1531.8	0.0	0.0	167.5	1508.2	1609.5	1531.8
10	109	3	64	36 0 N	4 32 W	7/23/54	16 11	0	700	1530.5	0.0	0.0	200.0	1508.6	1532.5	1530.5
11	109	3	64	36 6 N	4 31 W	8/14/62	17 17	0	851	1537.4	0.0	0.0	182.0	1508.2	1940.8	1537.4

SAMPLE RSVP OUTPUT (Page 3 of 6)

AESD ENVIRONMENTAL INFORMATION SYSTEM

21/12/79

AL

LATITUDE AND LONGITUDE BOUNDARIES 35 35 N 36 10 N 4 35 W 3 50 W

MONTHS INCLUDED IN DATA RETRIEVAL 7 8

EARLIEST YEAR OF DATA RETRIEVAL 1900

MINIMUM DEPTH FOR DATA RETRIEVAL 500 METERS

MAXIMUM SEARCH DEPTH FOR SONIC LAYER 50 M MINIMUM SEARCH DEPTH FOR SUBSURFACE MAXIMA 50 M

BOTTOM (MAX)	ARCHIVAL DEEP SOUND SPEED PROFILE (M/S) EXTENDED TO 10,000 METERS								
	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000
3000.0	1521.5	1538.4	1555.5	1573.6	1592.0	1610.0	1628.0	1646.0	1664.0	1682.0

* * * * * *

II-19

DISTRIBUTION OF ALL OCEAN STATIONS FOR THE AREA REQUESTED

TOTAL NUMBER OF STATIONS IN THE AREA 43 (INCLUDES SHALLOW STATIONS AND PROFILES WITH MISSING DATA)

MONTH SUMMARY

JAN	6	APR	3	JUL	9	OCT	1
FEB	5	MAY	2	AUG	10	NOV	0
MAR	0	JUN	7	SEP	0	DEC	0

YEAR SUMMARY

1900-04	0	35-39	0	70-74	0
05-09	1	40-44	0	75-79	0
10-14	1	45-49	11	80-84	0
15-19	0	50-54	5	85-89	0
20-24	2	55-59	8	90-94	0
25-29	1	60-64	14	95-99	0
30-34	0	65-69	0		

DEPTH SUMMARY

0- 500	15	2001-2500	0	4001-4500	0
501-1000	21	2501-3000	0	5001-5500	0
1001-1500	7	3001-3500	0	5501-6000	0
1501-2000	0	3501-4000	0	6000-9999	0

* * * * * *

NUMBER OF STATIONS USED FOR ANALYSIS AND MODEL PROFILE SELECTION 11

SAMPLE RSVP OUTPUT (Page 4 of 6)

STATISTICAL INFORMATION AND PROFILE SELECTION

(STATISTICS ARE COMPUTED FROM ALL PROFILES FOR THE AREA, YEARS, AND MONTHS REQUESTED, INCLUDING SHALLOW STATIONS AND PROFILES WITH MISSING DATA)

AL 21/12/79

	DEPTH (M)	MODEL PROFILE	SOUND SPEED SUMMARY (M/S) MEAN	MINIMUM	MAXIMUM	STANDARD DEVIATION (M/S)	NUMBER OF OBSERVATIONS	REPRESENTATIVE PROFILES (1)	(2)	(3)	DEPTH (M)
1	0	1532.8	1534.5	1530.5	1538.1	2.5	16	1533.4	1532.8	1535.2	0
2	10	1528.3	1531.8	1523.1	1536.8	3.1	16	1532.2	1528.3	1532.8	10
3	20	1524.6	1528.0	1522.1	1534.1	2.9	16	1532.2	1524.6	1530.4	20
4	30	1522.4	1524.2	1521.3	1529.4	2.4	18	1524.7	1522.4	1527.9	30
5	50	1519.2	1518.8	1515.0	1523.3	2.2	18	1519.2	1519.2	1523.3	50
6	75	1515.6	1515.4	1511.4	1520.0	2.6	18	1515.8	1515.6	1518.4	75
7	100	1513.3	1513.3	1509.4	1518.5	2.4	18	1512.3	1513.3	1515.3	100
8	125	1512.2	1511.9	1508.7	1515.7	2.0	17	1511.1	1512.2	1514.1	125
9	150	1511.1	1510.8	1508.3	1513.2	1.6	17	1510.1	1511.1	1512.6	150
10	200	1509.3	1509.5	1508.3	1511.4	1.1	17	1508.7	1509.3	1511.1	200
11	250	1509.1	1509.6	1509.0	1511.5	.7	16	1509.3	1509.1	1509.8	250
12	300	1510.1	1510.3	1509.9	1511.7	.5	16	1510.0	1510.1	1510.2	300
13	400	1511.9	1511.9	1511.4	1512.4	.3	14	1511.6	1511.9	1511.9	400
14	500	1513.4	1512.9	1506.1	1513.7	1.9	14	1513.7	1513.4	1513.5	500
15	600	1514.9	1515.0	1514.7	1515.6	.2	11		1514.9	1515.0	600
16	700	1516.3	1516.5	1516.3	1516.7	.1	10		1516.3	1516.6	700
17	800	1517.6	1517.9	1517.6	1518.2	.2	7		1517.6	1518.2	800
18	900	1519.7	1519.7	1519.5	1519.8	.1	4			1519.8	900
19	1000	1521.3	1521.3	1521.2	1521.4	.1	2				1000
20	1100	1522.9	1522.9	1522.9	1522.9	0.0	1				1100
21	1200	1524.6	1524.6	1524.6	1524.6	0.0	1				1200
22	1300	1526.3	1526.3	1526.3	1526.3	0.0	1				1300
23	1400										1400
24	1500										1500
25	1750										1750
26	2000										2000
27	2500										2500
28	3000										3000
29	4000										4000
30	5000										5000
31	6000										6000
32	7000										7000
33	8000										8000
34	9000										9000
35	10000										10000

PROFILE	ID	MSU	MSQ5	MSQ1	LATITUDE	LONGITUDE	DATE	TIME	DEPTH (M)	BOTTOM (M)
(1)	1 1	109	3	53	35 40 N	3 56 W	8/14/57	14	528	
(2)	1 2	109	3	54	35 56 N	4 30 W	7/22/62	0	836	
(3)	1 4	109	3	54	35 52 N	4 15 W	8/ 3/62	0	985	

SAMPLE RSVP OUTPUT (Page 5 of 6)

SOUND SPEED PROFILE CHARACTERISTICS
(COMPUTED USING THE 11 PROFILES SELECTED FOR ANALYSIS)

AL 21/12/79

MEAN SOUND SPEED AT THE SURFACE 1534.2 M/S 2.3 M/S (ONE STANDARD DEVIATION)

LAYER DEPTH SUMMARY

PERCENTAGE OCCURRENCE 18 PERCENT
(PERCENTAGE OF TOTAL STATIONS INDICATING A SONIC LAYER DEPTH)

MEAN DEPTH 6 METERS 5 METERS (SD)
(ZERO DEPTH SONIC LAYER NOT INCLUDED IN MEAN DEPTH CALCULATION)

MEAN SOUND SPEED AT THE LAYER 1533.9 M/S .1 M/S (SD)

MEAN GRADIENT 0.000 M/S/M 0.000 M/S/M (SD) RANGE OF GRADIENTS 0.000 TO 0.000 M/S/M
(SURFACE SOUND SPEED TO SONIC LAYER DEPTH)

BELOW LAYER GRADIENT -.336 M/S/M .120 M/S/M (SD)
(GRADIENT FROM SONIC LAYER TO AT LEAST 30 METERS BELOW SONIC LAYER OR
IF NO SONIC LAYER, GRADIENT IS THAT COMPUTED FROM THE SURFACE TO 30 METERS)

SUBSURFACE SOUND SPEED MAXIMA (SOUND SPEED FLUCTUATIONS GREATER THAN 0.2 M/S LOCATED ABOVE THE AXIS)

PERCENTAGE OCCURRENCE 0 PERCENT

DEEP SOUND CHANNEL AXIS (DEEPEST SOUND SPEED MINIMUM)

MEAN DEPTH 230 M 68 M (SD)

MEAN SOUND SPEED 1509.1 M/S 1.1 M/S (SD)

CRITICAL DEPTH (CONJUGATE DEPTH)

MEAN DEPTH 1749 M 136 M (SD) 11 PROFILES EXTRAPOLATED TO OBTAIN CRITICAL DEPTH VALUES
(CRITICAL DEPTH IS THAT DEPTH OCCURRING BELOW THE DEEP SOUND CHANNEL AXIS
WITH A SOUND SPEED EQUAL TO THE NEAR-SURFACE SOUND SPEED MAXIMUM)

RANGE OF MEASURED BOTTOM DEPTHS IN AREA OF INTEREST 202 TO 1460 METERS
(MEASURED BOTTOM DEPTHS OBTAINED FROM THE OCEAN STATION FILES ARE CONSIDERED APPROXIMATE AND SHOULD
BE USED ONLY TO INDICATE PROBABLE BOTTOM LIMITING OR DEPTH EXCESS CONDITIONS IN THE AREA)

SAMPLE RSVP OUTPUT (Page 6 of 6)

OCEAN DATA SYSTEMS, INC.
6000 EXECUTIVE BLVD., ROCKVILLE, MARYLAND 20852 • 301/881-3031

Submitted To:

Office of Naval Research
Washington, D.C.

RSVP PLOT/PUNCH (RSVPPLP) PROGRAM

Technical Task Report

June 30, 1980

Prepared under
Contract N00014-78-C-0818

Prepared by:

J. Webster
Ocean Data Systems, Inc.
Rockville, Maryland 20852

FOREWORD

This document is a task report prepared under Contract No. N00014-78-C-0818 for the Office of Naval Research, Washington, D.C., *in* support of the Naval Ocean Research and Development Activity (NORDA) - Code 320, Bay St. Louis, Mississippi. The report describes the work performed in fulfilling part of the contract, and serves as documentation for a computer program to be used in plotting or punching representative sound speed profiles from an archival file of ocean station data.

Ocean Data Systems, Inc. is indebted to Eigoro Hashimoto, NORDA Code 320, for assistance with program specifications and for furnishing an environment conducive to completion of this task.

ABSTRACT

This report contains a description of program RSVPPLP, part of the RSVP (Retrieve Sound Velocity Profile) system. Program RSVPPLP allows plotting and punching of the sound speed profiles that are retrieved by the system. The report includes instructions for use of RSVPPLP and sample run decks illustrating execution of the program at the computer facilities at the David Taylor Naval Ship Research and Development Center (DTNSRDC), Carderock, Maryland, and at Eglin Air Force Base, Florida.

TABLE OF CONTENTS

SECTION		PAGE
	FOREWORD	i
	ABSTRACT	ii
	TABLE OF CONTENTS	iii
	LIST OF FIGURES	iv
I.	INTRODUCTION	I-1
II.	INPUT	II-1
	1. Mass Storage Input	II-1
	2. Card Input	II-6
III.	OUTPUT	III-1
	1. Printed Output	III-1
	1. Standard Output	III-1
	2. Error Messages	III-1
	2. Plotted Output	III-5
	3. Card Output	III-7
IV.	PROGRAM DESCRIPTION	IV-1
	1. Main Program	IV-1
	2. Subroutine ABRT	IV-9
	3. Subroutine ANNOT	IV-11
	4. Subroutine AXES	IV-14
	5. Subroutine FRITZ	IV-17
	6. Subroutine LEGEND	IV-24
	7. Subroutine PAGE	IV-27
	8. Subroutine PLDASH	IV-29
	9. Subroutine PLDOT	IV-31
	10. Subroutine PLOTIT	IV-33
	11. Subroutine PLPROF	IV-38
	12. Subroutine PNCH	IV-43
	13. Subroutine SCALDS	IV-45
V.	CROSS REFERENCE CHARTS	V-1
	1. Subroutine Cross Reference	V-1
	2. COMMON Cross Reference	V-2
VI.	USER'S GUIDE	VI-1
	1. File Identification	VI-1
	2. Sample Jobs	VI-2

LIST OF FIGURES

FIGURE		PAGE
I-1	Job Flow for the RSVP System	I-2
II-1	Sample Card Input	II-9
III-1	Sample Printer Output	III-2
III-2	Sample Plotter Output	III-6
III-3	Sample Card Output	III-9

I. INTRODUCTION

The RSVP system was developed by the Acoustic Environmental Support Detachment (AESD) of the Office of Naval Research. It retrieves, along with other relevant data for acoustic modeling, representative or model sound speed profiles for a given ocean location and time of year. The data base used by the system is a subset of ocean station data from the National Oceanographic Data Center (NODC). For further information about the retrieval process, see the following report:

> "AESD Sound-Speed Profile Retrieval System (RSVP)," by John J. Audet, Jr., and Gregory G. Vega; AESD Technical Note TN-74-03, October 1974.

The report herein presented describes RSVPPLP, a program for plotting, modifying, filtering or punching the RSVP retrieved sound speed profiles. RSVPPLP is a modification of program RSVPPREP, which was part of the RSVP system developed by Vega and Audet. Figure I-1 on the following page shows how RSVPPLP fits into the RSVP system.

Section II of this document describes the input required by program RSVPPLP. Section III describes the output produced by the program. Section IV contains individual descriptions of each module of RSVPPLP, along with a description of COMMON storage. Section V has cross reference charts for COMMON storage and for the program modules. Section VI contains information needed for running the program - file names and sample jobs.

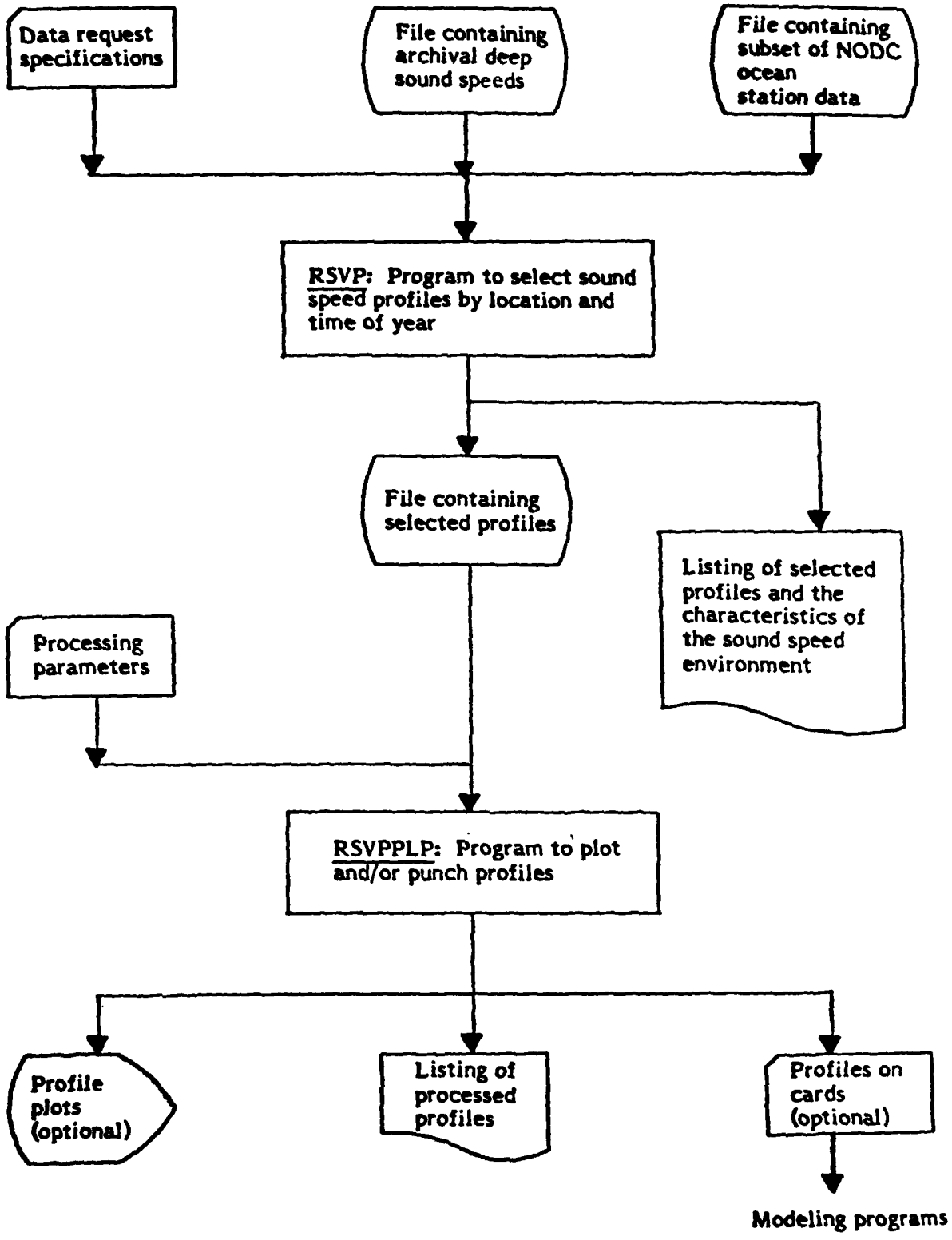


FIGURE I-1: JOB FLOW FOR THE RSVP SYSTEM

II. INPUT

II.1 Mass Storage Input

Mass storage input for RSVPPLP consists of a file containing sets of sound speed profiles that were output from program RSVP along with information used in retrieval of the profiles. Each set in this file is the output from one request (by ocean location and time of year) to program RSVP. There is a maximum of 16 sets per file.

Each set in the file consists of one record each of Types 1-4, followed by 35 records of Type 5 as described on the following pages.

Record Types 1-4 are images of the original request specification input to program RSVP. None of the information on Record Types 1-4, except the title from Record Type 1 and the archival deep sound speeds from Record Type 4, is used by program RSVPPLP. Records of Type 5 contain the sound speed profiles that were retrieved by RSVP as a result of the request shown in Records 1-4.

A description of the five record types follows.

Record Type	Format	Character Positions	Variable Name	Description
1	6A10	1-60	(REQT(K,I), K=1,6)	Up to 60 alphanumeric characters for an identifying title and a date for the I-th request.
	I2	78-79**	I	Request number (1 - 16).
	I1	80	ISEQ	Record type number, equal to 1.
2	I2	1-2**	LL(1,I)	Degrees of lower latitute
	I2	4-5**	LL(2,I)	Minutes limit of search
	A1	7	LL(3,I)	Hemisphere area for I-th request.
	I2	10-11**	LL(4,I)	Degrees of upper latitude
	I2	13-14**	LL(5,I)	Minutes limit of search
	A1	16	LL(6,I)	Hemisphere area for I-th request
	I3	21-23**	LL(7,I)	Degrees of lower longi-
	I2	25-26**	LL(8,I)	Minutes tude limit of
	A1	28	LL(9,I)	Hemisphere search area for I-th request
	I3	31-33**	LL(10,I)	Degrees of upper longi-
	I2	35-36**	LL(11,I)	Minutes tude limit of
	A1	38	LL(12,I)	Hemisphere search area for I-th request.
	I3	50-52**	LMSQ	Marsden square number and
	I1	54	LQUAD	quadrant number used by RSVP to look up the deep sound speeds in the archival file. If blank, deep sound speeds are specified by INDM below.
	A1	55	INDM	If LMSQ and LQUAD above are specified, INDM is disregarded. If INDM is "M", the Marsden square and quadrant are calculated from latitude and longitude. If INDM is blank, deep sound speeds are entered from cards of type 4.
	I2	78-79**	I	Request number (1-16)
	I1	80	ISEQ	Record type number, equal to 2.

*The value is placed anywhere in the positions specified with the decimal point expressed.

**The value is right-justified in the positions specified with no decimal point.

Record Type	Format	Character Positions	Variable Name	Description
3	12(I2,1X)	1-2,** 4-5, 7-8, : : 34-35	(ISN(M,I), M=1,12)	Month numbers (01-12) used in data search for I-th request.
	I4	38-41**	IY(I)	Earliest year used in data search for I-th request.
	I4	44-47**	MIND(I)	Minimum search depth in meters for I-th request.
	F4.0	50-53*	XSONIC(I)	Maximum search depth in meters of sonic layer for I-th request.
	F4.0	56-59*	SSXMIN(I)	Minimum search depth in meters of subsurface maximum for I-th request.
	I2	78-79**	I	Request number (1-16)
	I1	80	ISEQ	Record type number, equal to 3.
4	11F6.1	1-6*	BLT(I)	Maximum bottom depth in meters for the Marsden square quadrant.
		7-12,* 13-18, : : 61-66	(SVEXT(J,I), J=1,10)	Archival deep sound speeds in meters/sec. used to extend profiles for the I-th request.
	I3	69-71**	MSQ	Marsden square number for archival deep sound speeds.
	I1	73	MSQ5	Marsden square quandrant.
	I2	78-79**	I	Request number (1-16)
	I1	80	ISEQ	Record type number, equal to 4.

There is one record of each of Types 1-4, representing an RSVP request.

*The value is placed anywhere in the positions specified with the decimal point expressed.

**The value is right-justified in the positions specified with no decimal point.

Record Type	Format	Character Positions	Variable Name	Description
5	I2	9-10**	J	Sequence number (1-35) for sound speed profile point.
	I5	16-20**	LDEPTH(J)	Depth in meters at J-th sound speed profile point.
	F6.1	25-30*	RPROF(J)	Sound speed in meters/sec. at the J-th depth for the model (most typical) profile.
	F6.1	35-40*	SVLM(J,I)	Mean sound speed in meters/sec. at the J-th depth, for all profiles selected for the I-th request.
	F6.1	44-49*	SVMIN(J,I)	Minimum sound speed in meters/sec. at the J-th depth, for all profiles selected for the I-th request.
	F6.1	53-58*	SVMAX(J,I)	Maximum sound speed in meters/sec. at the J-th depth, for all profiles selected for the I-th request.
	F4.1	67-70*	SVLSD(J,I)	Standard deviation from the mean in meters/sec. at the J-th depth, for all profiles selected for the I-th request.
	I5	81-85**	CNT(J,I)	Number of observations at the J-th depth for all profiles selected for the I-th request.
	F6.1 F6.1 F6.1	95-100,* 104-109,* 113-118*	(SVLJ(J,K), K=1,3)	Sound speed in meters/sec. at the J-th depth for the 3 most representative profiles selected for the I-th request.
	I5	123-127**	LDEPTH(J)	Depth in meters at J-th sound speed profile point (repeat of second field above)

*The value is placed anywhere in the positions specified with the decimal point expressed.

**The value is right-justified in the positions specified with no decimal point.

There are 35 records of Type 5, one for each profile depth level.

Sets of records of Types 1-4 followed by 35 records of Type 5 are repeated for each RSVP request, up to a maximum of 16 requests.

II.2 Card Input

Card input to RSVPPLP consists of one card for each set of sound speed profiles to be plotted and/or punched from an RSVP output file. The card specifies:

1. The sequence number of the RSVP request to be processed from the RSVP output file. This corresponds to the number punched in columns 78-79 in the original request specification input to the RSVP retrieval.

2. The indices of the profiles to be selected from those produced by the RSVP request. Except for the numbers 5 and 6, the indices refer to the column numbers on the printed output of the sound speed profiles from program RSVP. The index numbers and the corresponding profile selected are shown below.

Profile Index No.	Profile Selected
1	Model
2	Mean
3	Minimum
4	Maximum
5	Mean minus standard deviation
6	Mean plus standard deviation
7	Representative No. 1
8	Representative No. 2
9	Representative No. 3

3. The processing options. There are three of these:

Code	Meaning
T	Extend the specified profile with mean values first and then, if necessary, with archival deep sound speeds (from Record Type 4 described in Section II.1) to a specified level.
M	Extend with mean values only.
F	Filter the data by eliminating points from the profile, but still leaving a good representation of the curve. See the description of subroutine FRITZ in Section IV.5 for more details on the filtering option.

Note that T and M are mutually exclusive.

4. Editing. Up to three points may be replaced in or added to the selected profiles.

5. Output options.

Code	Meaning
P	Plot the selected profiles. Only one graph is generated per input card; all the profiles selected are plotted on the same graph.
N	Same as P, except that every 5th point on the profiles is annotated with its profile index number.
C	Punch the selected profiles.

Each input card is a self-contained entity and specifies the RSVP request number, the index of one or more profiles to be processed, and for each index specified, either zero, one or two of the processing options. After all the indices and their corresponding processing options appears, the output options are specified. This is followed by parameters used in the editing and filtering, and a title used to identify the plotter/punch output.

The format of the card is given below. Sample card input appears on succeeding pages.

Format	Columns	Variable Name	Description
I2	1-2**	JSET	The RSVP request number of the set of profiles to be processed. Input cards must be in increasing order by this number.
8A1	3-10	(LSEL(I), I=1,8)	Processing parameters specified as an index (1-9) for each profile to be processed, followed by the processing options (T, M, F) for that profile, terminating with the output options (P, C) for the set of profiles. See the explanation above for more details. See the following pages for sample input.
I2 F7.0 I2 F7.0 I2 F7.0	11-12,** 14-20,* 21-22,** 24-30,* 31-32,** 34-40*	(MD(I), SM(I), I=1,3)	Data to be used in editing sound speed profiles. Expressed as pairs of sequence number within profile and replacement sound speed in meters/sec. The specified editing is done to all profiles selected in columns 3-10 above. A maximum of 3 points can be replaced or added. MD(I) cannot be larger than 35. If no editing is desired, leave these fields blank.

*The value may appear anywhere in the indicated columns with the decimal point punched.

**The value must be right-justified in the indicated columns with no decimal point.

Format	Columns	Variable Name	Description
I2	41-42**	LC	Number of points to be selected from each of the specified profiles when the selected profile is filtered. Maximum is 35. Default is 15.
F3.1	43-45*	TL	Tolerance in meters per second used for filtering option (F). Maximum is 3.75. Default is 1.5. See description of Subroutine FRITZ in Section IV.5 for a detailed explanation of this parameter.
3A10	46-75	NOTE2	Up to 30 alphanumeric characters used as annotation on the plot and as an identifier for the punched output.
I1	76	NEXT	Index number of the deep level to which profiles are to be extended, using archival deep sound speeds from the Type 4 record described in Section II.1. Next is used when processing option T is chosen in columns 3-10. Deep level 1 is 1000 meters, level 2 is 2000 meters, and so on to level 9 at 9000 meters. If NEXT is blank or 0, then the deep level is set to 10000 meters.
I3	78-80	DMAX	Maximum depth, in hundreds of meters, for plotting sound speed profiles. If DMAX is blank or 0, then a default of 6000 meters is assumed. If DMAX is set to a negative number, then the maximum depth for plotting is computed by the program.

This parameter card is repeated for each set of data to be selected, up to a maximum of 16 cards. Cards must be in increasing order by the request number in columns 1 and 2.

---

*The value may appear anywhere in the indicated columns with the decimal point punched.

**The value must be right-justified in the indicated columns with no decimal point.

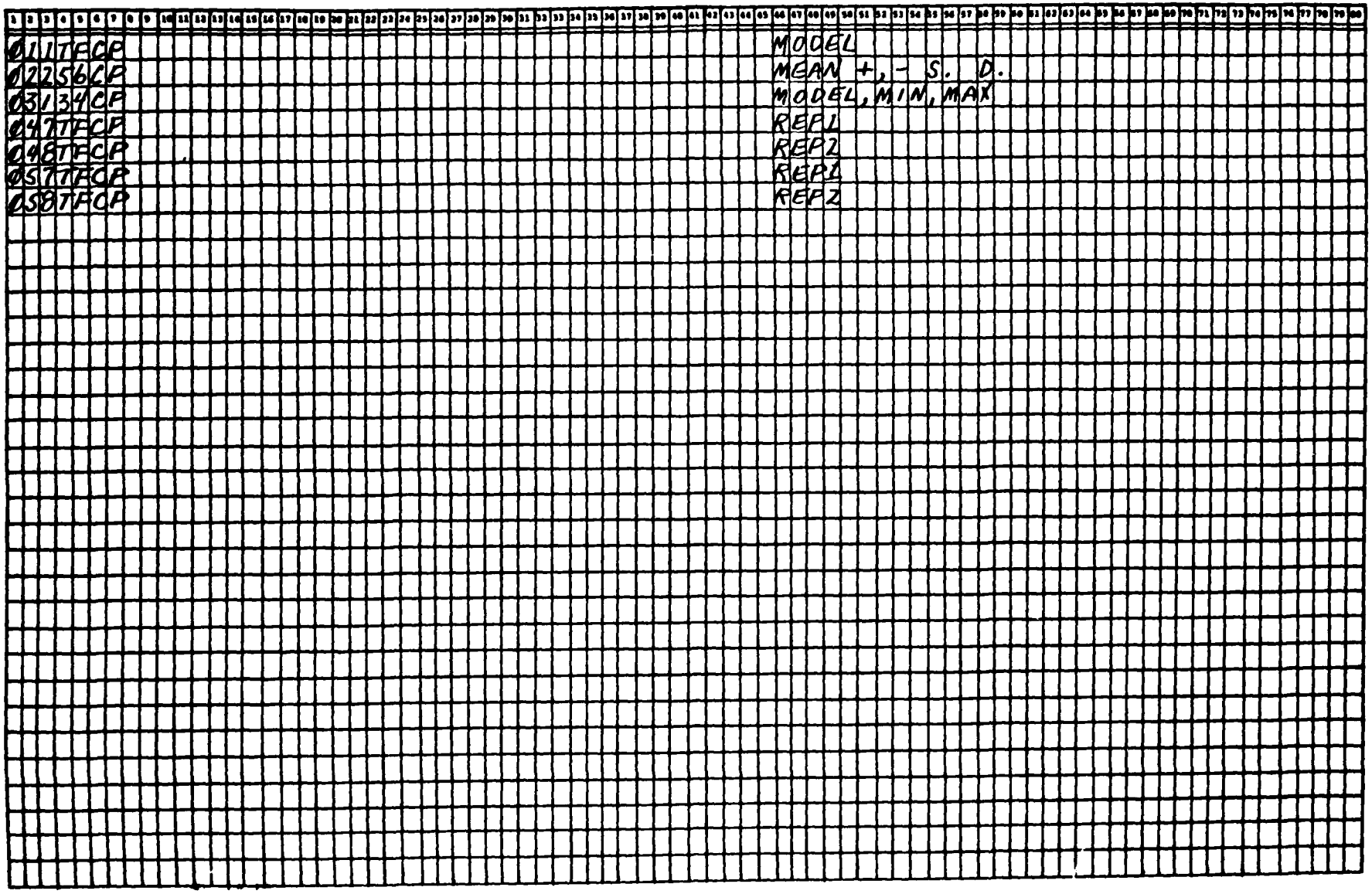


FIGURE II-1: SAMPLE CARD INPUT

III. OUTPUT

III.1 Printer Output

III.1.1 Standard Output

A listing of each profile selected is printed along with sequence numbers for each point in the profile. A heading at the top of each profile indicates the original RSVP request number and the processing done on the profile. Points on the profiles which have been filtered out are printed as zero.

See the following page for a sample printout.

III.1.2 Error Messages

An error in entering the RSVP request number on an input card to RSVPPLP produces the following message:

```
**********BAD REQUEST NO. j
           input card
           ABOVE INPUT CARD REJECTED
```

where j is the request number from the input card. The program continues with the next input card.

Printed by: Main program

Solution: Check columns 1-2 to be sure that the request number is between 1 and 16 inclusive.

An error in the sequence of the input cards for RSVPPLP produces the following message:

```
**********REQUEST NO. j OUT OF ORDER
           input card
           ABOVE INPUT CARD REJECTED
```

where j is the request number from the input card. The program continues with the next input card.

Printed by: Main program

Solution: Check columns 1 and 2 of each input to make sure that they are in order by request number.

---

	1 MODEL	1 EATMT	1 FILT	2 MEAN	2 MEAN-SD	2 MEAN+SD	3 MODEL	3 MIN	3 MAX	4 REPI	4 EATMT	4 FILT
1	1532.8	1532.8	1532.8	1539.5	1538.2	1540.8	1542.1	1534.7	1545.5	1543.3	1543.3	1543.3
2	1528.3	1528.3	1528.3	1537.1	1531.6	1540.6	1540.6	1521.5	1545.3	1541.6	1541.6	1541.6
3	1524.6	1524.6	1524.6	1529.6	1526.2	1533.0	1536.3	1517.1	1545.9	1526.5	1526.5	1526.5
4	1522.4	1522.4	1522.4	1521.9	1519.3	1524.5	1528.3	1514.8	1537.4	1522.1	1522.1	1522.1
5	1519.2	1519.2	0.0	1516.8	1515.9	1517.7	1518.6	1512.9	1523.5	1519.8	1519.8	1519.8
6	1515.6	1515.6	1515.6	1513.4	1512.2	1514.6	1514.0	1511.3	1519.9	1518.2	1518.2	1518.2
7	1513.3	1513.3	1513.3	1512.7	1512.2	1513.2	1513.4	1509.4	1518.9	1517.6	1517.6	1517.6
8	1512.2	1512.2	0.0	1512.6	1512.3	1512.9	1513.3	1510.1	1519.0	1517.8	1517.8	0.0
9	1511.1	1511.1	0.0	1512.7	1512.5	1512.9	1513.4	1511.3	1519.1	1517.9	1517.9	0.0
10	1509.3	1509.3	1509.3	1513.3	1513.0	1513.6	1513.7	1511.9	1519.2	1518.0	1518.0	1518.0
11	1509.1	1509.1	1509.1	1513.8	1513.3	1514.3	1514.5	1512.9	1518.7	1517.8	1517.8	0.0
12	1510.1	1510.1	0.0	1514.3	1513.6	1515.0	1515.2	1513.1	1518.6	1517.8	1517.8	0.0
13	1511.9	1511.9	0.0	1515.4	1514.7	1516.1	1516.2	1514.9	1519.6	1517.7	1517.7	0.0
14	1513.4	1513.4	1513.4	1516.7	1516.0	1517.4	1517.1	1516.2	1520.7	1517.8	1517.8	1517.8
15	1514.9	1514.9	0.0	1518.1	1517.6	1518.6	1518.5	1517.7	1521.5	1518.8	1518.8	0.0
16	1516.3	1516.3	0.0	1519.6	1519.1	1520.1	1519.9	1519.3	1522.5	1519.9	1519.9	0.0
17	1517.6	1517.6	1517.6	1521.2	1520.8	1521.6	1521.4	1520.8	1523.5	1521.1	1521.1	1521.1
18	1519.7	1519.7	0.0	1522.5	1522.2	1522.8	1522.8	1522.3	1524.6	1522.6	1522.6	0.0
19	1521.3	1521.3	1521.3	1524.1	1523.8	1524.4	1524.4	1523.7	1525.8	1524.2	1524.2	0.0
20	1522.9	1522.9	0.0	1525.7	1525.6	1525.8	1526.0	1525.7	1526.3	1525.8	1525.8	0.0
21	1524.6	1524.6	0.0	1527.3	1527.1	1527.5	1527.6	1527.3	1527.9	1527.4	1527.4	0.0
22	1526.3	1526.3	0.0	1529.0	1528.8	1529.2	1529.2	1528.9	1529.6	1529.1	1529.1	0.0
23	0.0	0.0	0.0	1530.7	1530.5	1530.9	1530.8	1530.6	1531.3	1530.8	1530.8	0.0
24	0.0	0.0	0.0	1532.3	1532.1	1532.5	1532.5	1532.0	1534.1	1532.5	1532.5	1532.5
25	0.0	0.0	0.0	1536.6	1536.5	1536.7	1536.7	1536.1	1537.3	1536.7	1536.7	0.0
26	0.0	1538.4	0.0	1541.0	1541.0	1541.0	1541.0	1540.3	1541.3	1541.0	1541.0	0.0
27	0.0	0.0	0.0	1549.5	1549.5	1549.5	1549.5	1548.9	1549.9	0.0	1549.5	0.0
28	0.0	1555.5	1555.5	1558.0	1558.0	1558.0	1557.8	1557.8	1557.9	0.0	1558.1	0.0
29	0.0	1573.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1575.5	1575.5
30	0.0	1592.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1593.0	0.0
31	0.0	1610.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1610.5	0.0
32	0.0	1628.0	1628.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1628.0	1628.0
33	0.0	1646.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1646.0	0.0
34	0.0	1664.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1664.0	0.0
35	0.0	1682.0	1682.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1682.0	1682.0

FIGURE III-1: SAMPLE PRINTER OUTPUT

An error in entering the options on an input card to RSVPPLP produces the following message:

```
**********BAD OPTION o
           input card
           ABOVE INPUT CARD REJECTED
```

where o is the option from the input card. The program continues with the next input card.

Printed by: Main program

Solution: Check columns 3-10 to make sure that the options are M, T, F, C, P, or N.

An error in the RSVP data file produces the following message:

```
**********BAD RSVP DATA
           RSVP record
```

The program aborts after printing the message and the bad record.

Printed by: Main program

Solution: Check that the preceding run of RSVP was executed properly, and that the correct file name was used for the RSVPPLP run.

When the end of data is reached on the RSVP data file before all the input cards to RSVPPLP have been processed, the following message is printed:

```
**********NO MORE DATA ON RSVP FILE
           ALL INPUT CARDS WERE NOT PROCESSED
```

The program terminates normally.

Printed by: Main program

Solution: Check the input cards for a request number that does not exist in the preceding RSVP run.

If any of the sound speeds to be plotted are outside the range for plotting, the following error message is printed:

**********SOUND SPEED POINT i, d, s,
FOR PROFILE INDEX j OUTSIDE PLOT BOUNDS

where i is the sequence number of the point within the profile,
d is the depth of the point in meters,
s is the sound speed of the point in meters/second,
j is the profile index number.

Printed by: Subroutine PLPROF

Solution: Check output of RSVP program for points with speeds less than 1200 or greater than 1800 meters/sec.

III.2 Plotted Output

Plotted output is optional; it occurs only if the code P or the code N is punched in the appropriate place in columns 3-10 of the input parameter card. Only one graph can be generated by each input card. All the profiles selected on the input card are plotted on the same graph.

See the descriptions of the plotting subroutines PLOTIT, ANNOT, AXES, LEGEND, and PLPROF for details about the plotted output.

See the following page for a sample of plotted output.

PROFILE ANNOTATION
1 - MODEL
2 - MEAN
3 - MINIMUM
4 - MAXIMUM
5 - MEAN - STANDARD DEVIATION
6 - MEAN + STANDARD DEVIATION
7 - REPRESENTATIVE 1
8 - REPRESENTATIVE 2
9 - REPRESENTATIVE 3

PROCESSING OPTIONS
M - EXTENDED WITH MEAN
T - EXTENDED WITH MEAN + ARCHIVAL
F - FILTERED
E - EDITED

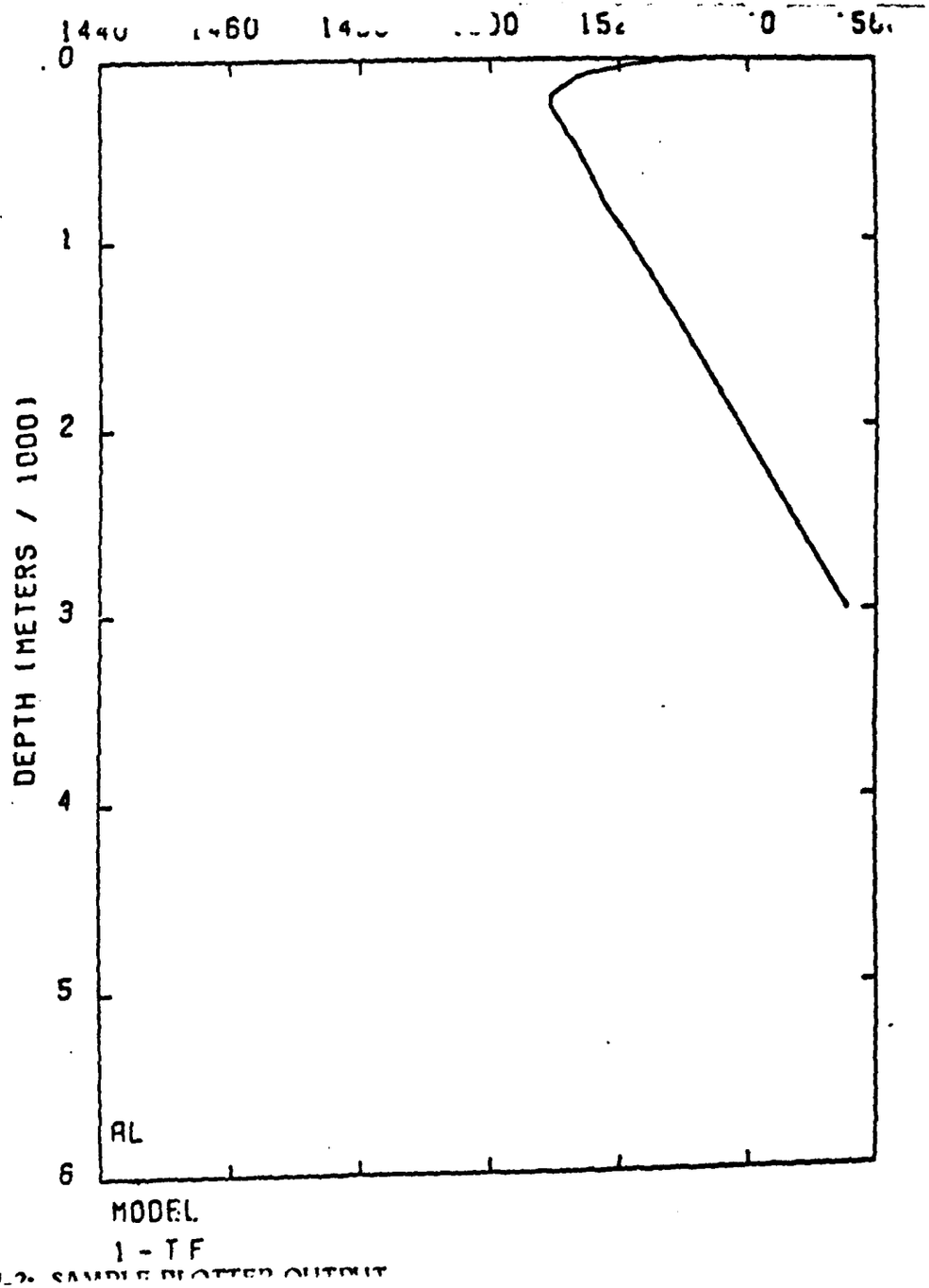


FIGURE III-2. SAMPLE PLOTTER OUTPUT

III.3 Card Output

Punched card output is optional. Card images are written on logical unit 3 if the code C is punched in the appropriate place in columns 3-10 of the input parameter card.

For each profile, a set of card images is output consisting of a header card (Type 1), a card containing the number of points in the profile (Type 2) followed by cards containing the profile expressed as depth, sound speed pairs, four pairs per card (Type 3).

The format of the output cards is described below. A listing of a sample punched card output is shown on a succeeding page.

Card Type	Format	Columns	Variable Name	Description
1	4A10	1-40	(ID(I,ISET), I=1,4)	First 40 characters of the identifying title from the original RSVP request sequence number ISET.
	3A10	41-70	(NOTE2(I), I=1,3)	Alphanumeric identification from columns 46-75 of the input parameter card.
	A10	71-80	LHS(K)	Alphanumeric description of the type (e.g., mean, model, etc.) for the Kth profile selected.
2	I5	1-5	L**	Number of points in the profile. Maximum is 35.

There is one Type 1 card followed by one Type 2 card for each profile punched.

**Value is right-justified in specified columns with no decimal point punched.

Card Type	Format	Columns	Variable Name	Description
3	8F10.3	1-10,* 11-20,* . . . 61-70,* 71-80*	(DT(I),ST(I), I=1,L)	The sound speed profile, expressed as pairs of (depth, sound speed) in (meters, meters/sec.

Cards of Type 3 are repeated, with up to 4 profile points per card, until all points in the profile have been specified, up to a limit of 35 points.

*The value is positioned anywhere in the columns specified with the decimal point punched.

```
                                                    MODEL                                                    FILT
AL
  14
      0.00    1532.80      10.00    1528.30      20.00    1524.60      30.00    1522.40
     75.00    1515.60     100.00    1513.30     200.00    1504.30     250.00    1509.10
    500.00    1517.40     800.00    1517.60    1000.00    1521.30    3000.00    1555.50
   7000.00    1629.00   10000.00    1682.00
                                          MEAN +,- S. D.                                          MEAN
101
  2A
      0.00    1539.50      10.00    1537.10      20.00    1529.60      30.00    1521.90
     50.00    1516.80      75.00    1513.40     100.00    1512.70     125.00    1517.60
    150.00    1512.70     200.00    1513.30     250.00    1513.80     300.00    1514.30
    400.00    1515.40     500.00    1516.70     600.00    1518.10     700.00    1519.60
    800.00    1521.20     900.00    1522.50    1000.00    1524.10    1100.00    1525.70
   1200.00    1527.30    1300.00    1529.00    1400.00    1530.70    1500.00    1532.30
   1750.00    1536.60    2000.00    1541.00    2500.00    1549.50    3000.00    1558.00
                                          MEAN +,- S. D.                                          MEAN-SD
101
  2A
      0.00    1538.20      10.00    1533.60      20.00    1526.20      30.00    1519.30
     50.00    1515.90      75.00    1512.20     100.00    1512.20     125.00    1512.30
    150.00    1512.50     200.00    1513.00     250.00    1513.30     300.00    1513.60
    400.00    1514.70     500.00    1516.00     600.00    1517.60     700.00    1519.10
    800.00    1520.80     900.00    1522.20    1000.00    1523.80    1100.00    1525.60
   1200.00    1527.10    1300.00    1528.80    1400.00    1530.50    1500.00    1532.10
   1750.00    1536.50    2000.00    1541.00    2500.00    1549.50    3000.00    1558.00
                                          MEAN +,- S. D.                                          MEAN+SD
101
  2A
      0.00    1540.80      10.00    1540.60      20.00    1533.00      30.00    1524.50
     50.00    1517.70      75.00    1514.60     100.00    1513.20     125.00    1512.90
    150.00    1512.90     200.00    1513.60     250.00    1514.30     300.00    1515.00
    400.00    1516.10     500.00    1517.40     600.00    1518.60     700.00    1520.10
    800.00    1521.60     900.00    1522.80    1000.00    1524.40    1100.00    1525.80
   1200.00    1527.50    1300.00    1529.20    1400.00    1530.90    1500.00    1532.50
   1750.00    1536.70    2000.00    1541.00    2500.00    1549.50    3000.00    1558.00
                                          MODEL,MIN,MAX                                           MODEL
102
  2A
      0.00    1542.10      10.00    1540.60      20.00    1536.30      30.00    1528.30
     50.00    1518.60      75.00    1514.00     100.00    1513.40     125.00    1513.30
    150.00    1513.40     200.00    1513.70     250.00    1514.50     300.00    1515.20
    400.00    1516.20     500.00    1517.10     600.00    1518.50     700.00    1519.90
    800.00    1521.40     900.00    1522.80    1000.00    1524.40    1100.00    1526.00
   1200.00    1527.60    1300.00    1529.20    1400.00    1530.80    1500.00    1532.50
   1750.00    1536.70    2000.00    1541.00    2500.00    1549.50    3000.00    1557.80
                                          MODEL,MIN,MAX                                           MIN
102
  2A
      0.00    1534.70      10.00    1521.50      20.00    1517.10      30.00    1514.80
     50.00    1512.90      75.00    1511.30     100.00    1509.40     125.00    1510.10
    150.00    1511.30     200.00    1511.90     250.00    1512.90     300.00    1513.10
    400.00    1514.90     500.00    1516.20     600.00    1517.70     700.00    1519.30
    800.00    1520.80     900.00    1522.30    1000.00    1523.70    1100.00    1525.70
   1200.00    1527.30    1300.00    1528.90    1400.00    1530.60    1500.00    1532.00
   1750.00    1536.10    2000.00    1540.30    2500.00    1548.90    3000.00    1557.80
                                          MODEL,MIN,MAX                                           MAX
102
  2B
      0.00    1545.50      10.00    1545.30      20.00    1545.90      30.00    1537.40
     50.00    1523.50      75.00    1519.90     100.00    1518.90     125.00    1519.00
    150.00    1519.10     200.00    1519.20     250.00    1518.70     300.00    1518.60
    400.00    1519.60     500.00    1520.70     600.00    1521.50     700.00    1522.50
    800.00    1523.50     900.00    1524.60    1000.00    1525.80    1100.00    1526.30
   1200.00    1527.90    1300.00    1529.60    1400.00    1531.30    1500.00    1534.10
   1750.00    1537.30    2000.00    1541.30    2500.00    1549.90    3000.00    1557.90
```

FIGURE III-3: SAMPLE CARD OUTPUT

IV. PROGRAM DESCRIPTION

IV.1 Main Program

Function: To extend, filter, edit, plot and/or punch sound speed profiles that have been previously retrieved (using program RSVP) from the NODC/LRAPP Geofile.

COMMON Storage: COMMON storage is not used in the RSVPPLP main program. It is used only in subroutine PLOTIT for communication with subsidiary plotting routines.

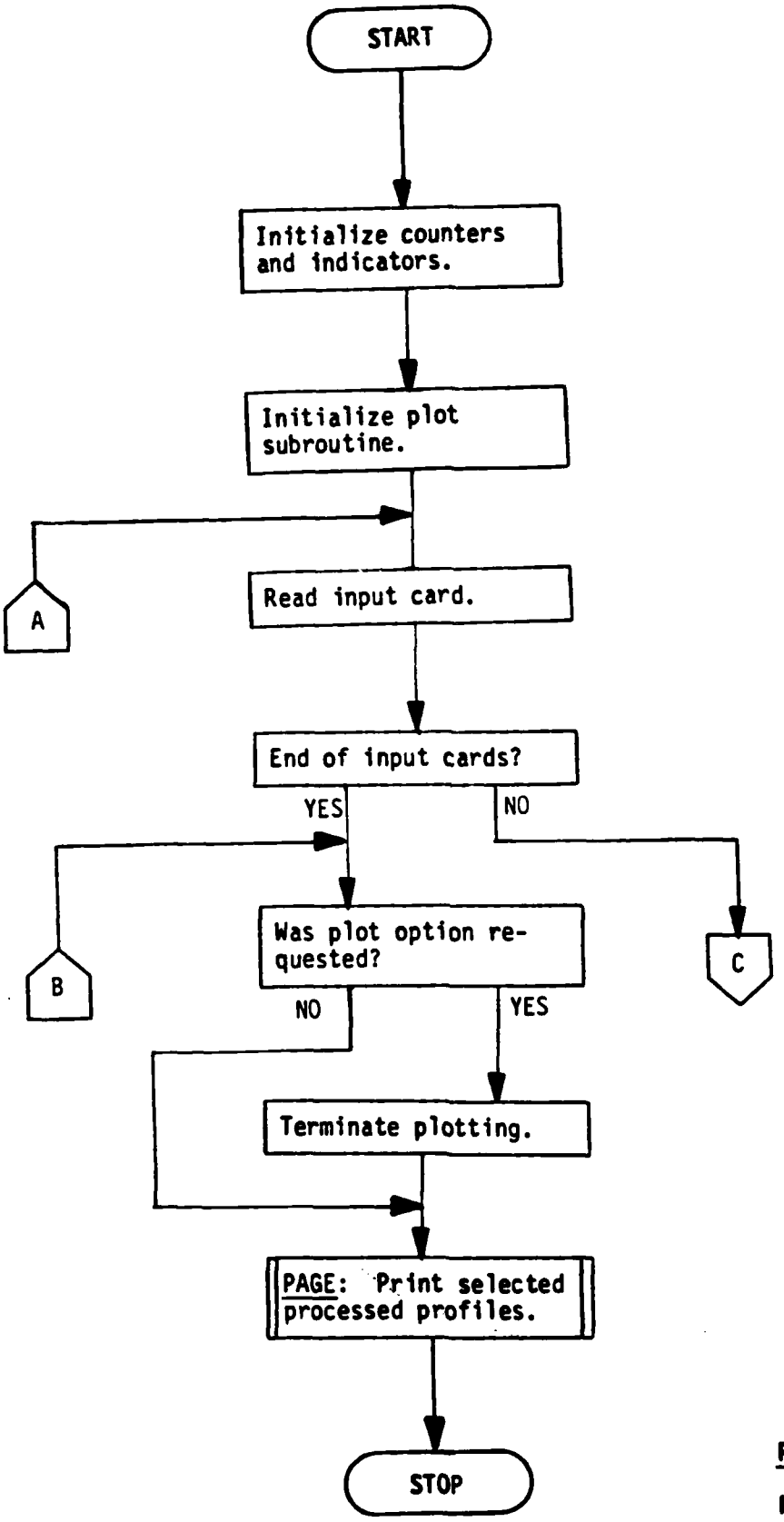
Description: Program RSVPPLP reads an input parameter card. It checks the card for validity, and then examines the options specified in the card for selection, processing, and output of sound speed profiles.

The specified profiles are read from the data file output by program RSVP, and moved to a processing array where they are edited or extended (in the main program) or filtered (by subroutine FRITZ). The profiles, both before and after each stage of processing, are stored in an array for later printing using subroutine PAGE.

If one of the output options on the input card is plotting, the processed profiles are plotted using subroutine PLOTIT and its subsidiary plotting subroutines ANNOT, AXES, LEGEND, PLPROF, and SCALDS. If one of the output options is punched cards, the card images of the processed profiles are written to a disk file using subroutine PNCH.

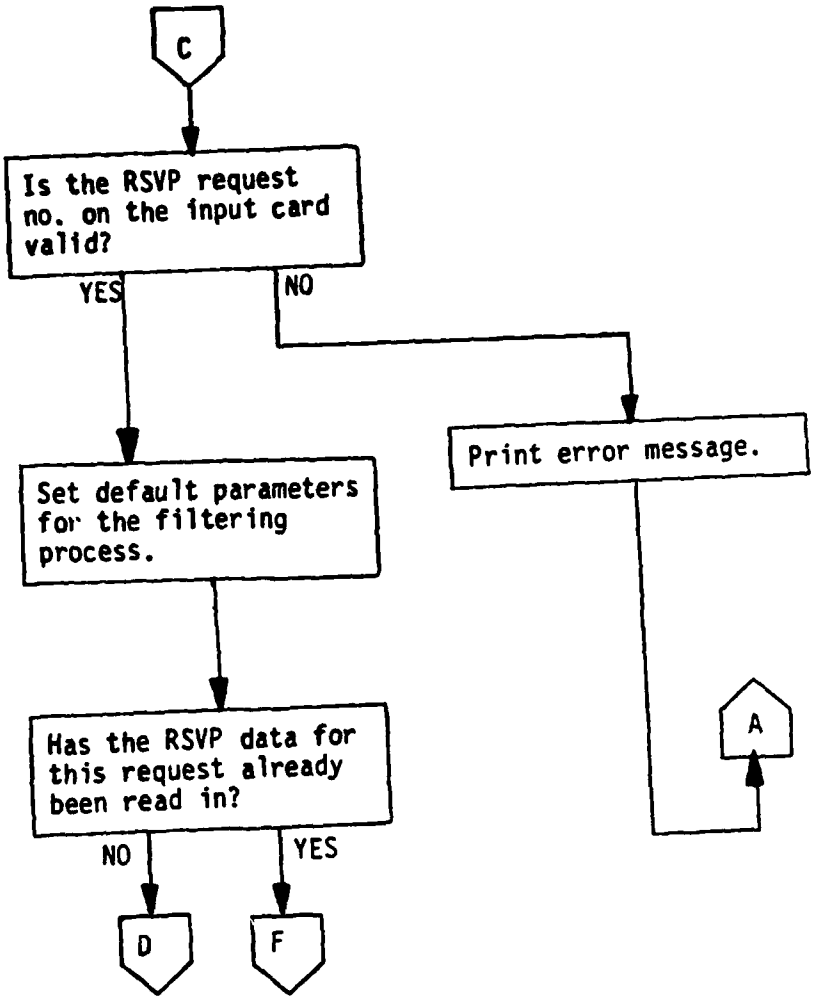
Succeeding input cards are read and the RSVP profile data specified by them is read and processed until there are no more input cards to be read.

See the next page for a diagram of the main program flow.



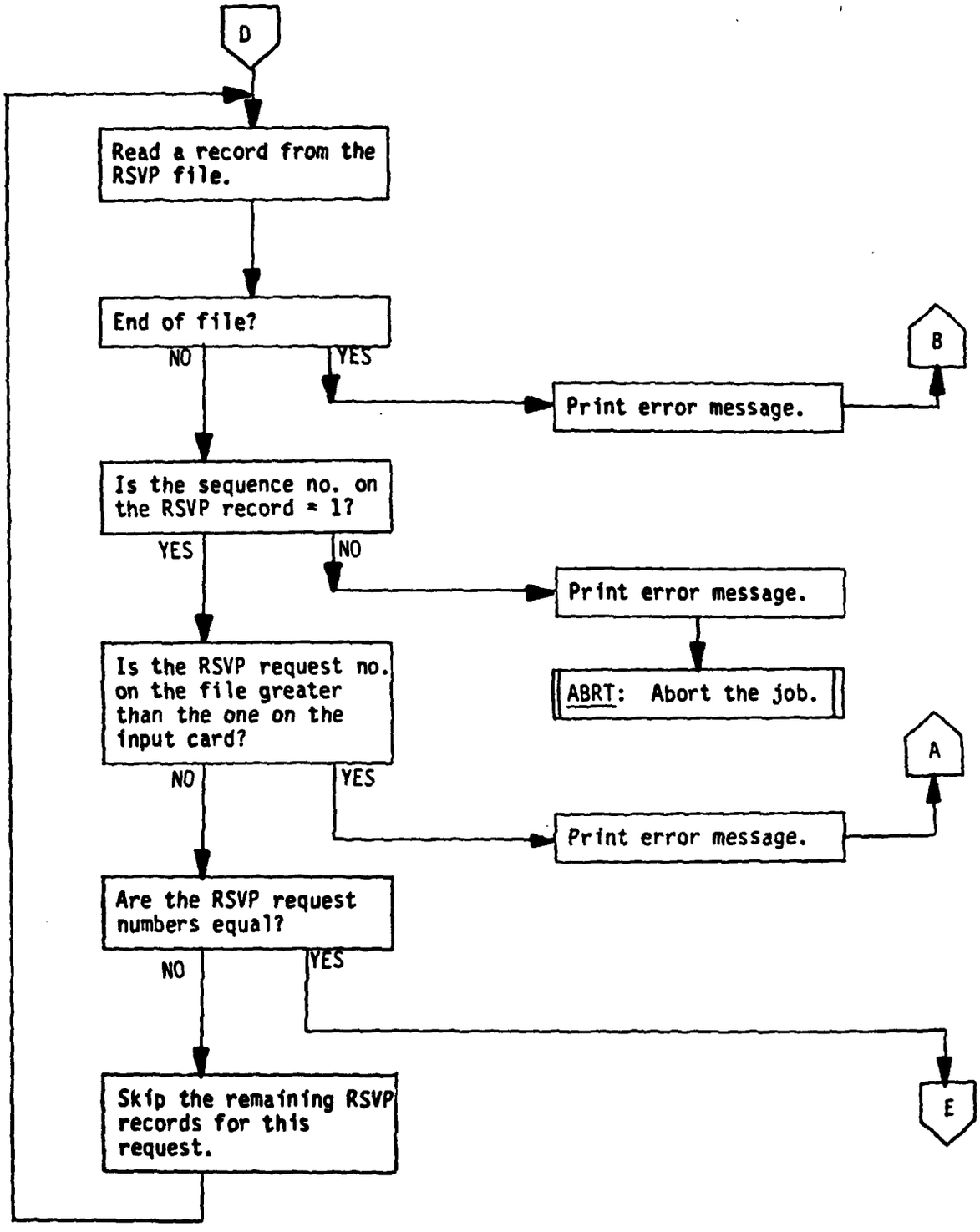
RSVPPLP

Page 1 of 7



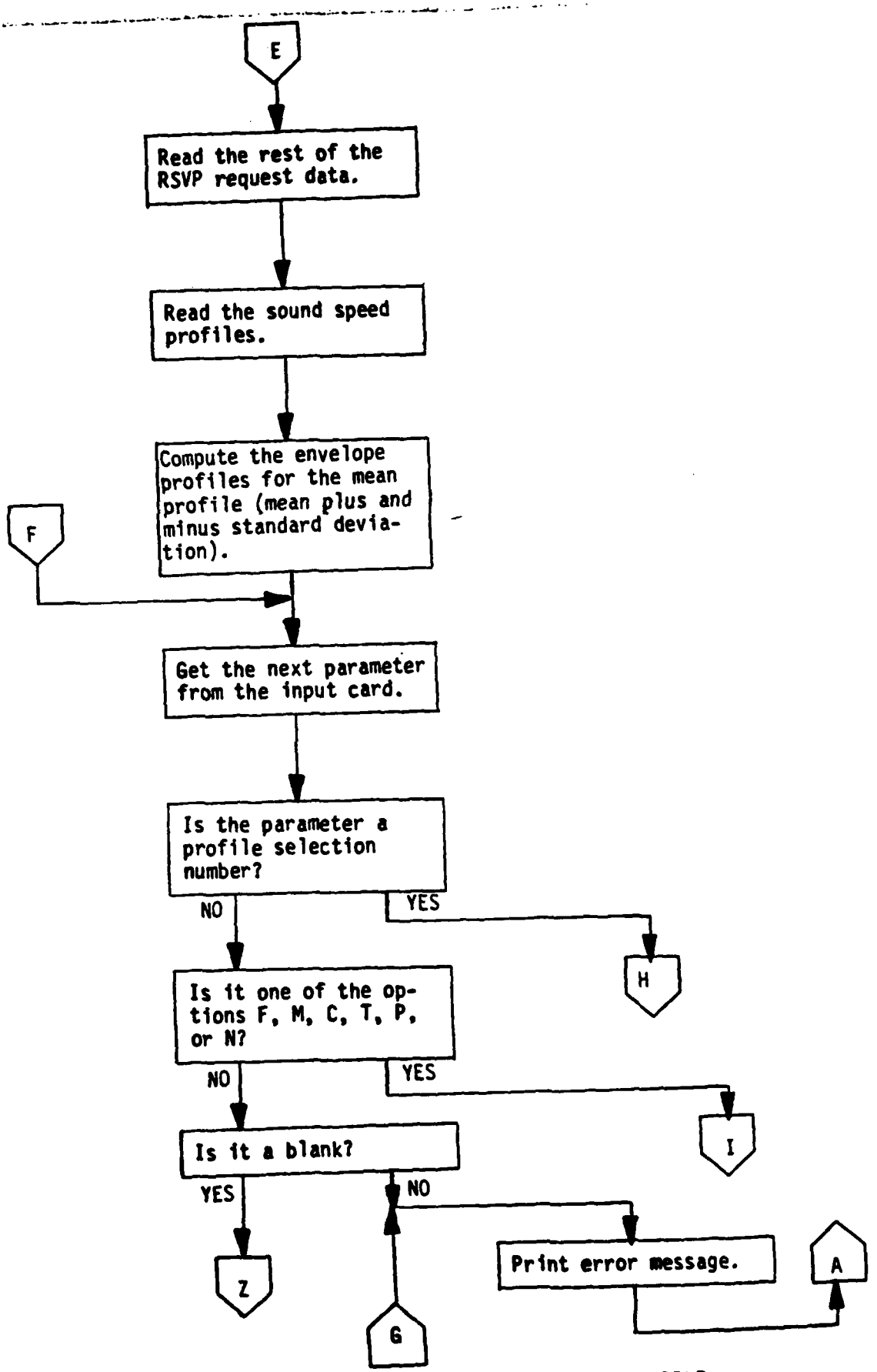
RSVPPLP

Page 2 of 7



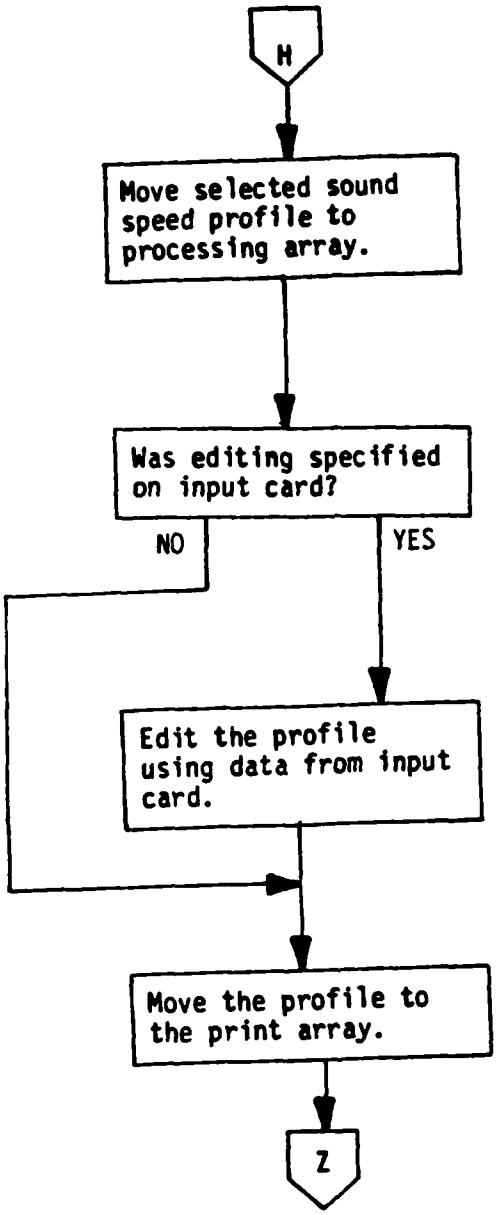
RSVPPLP

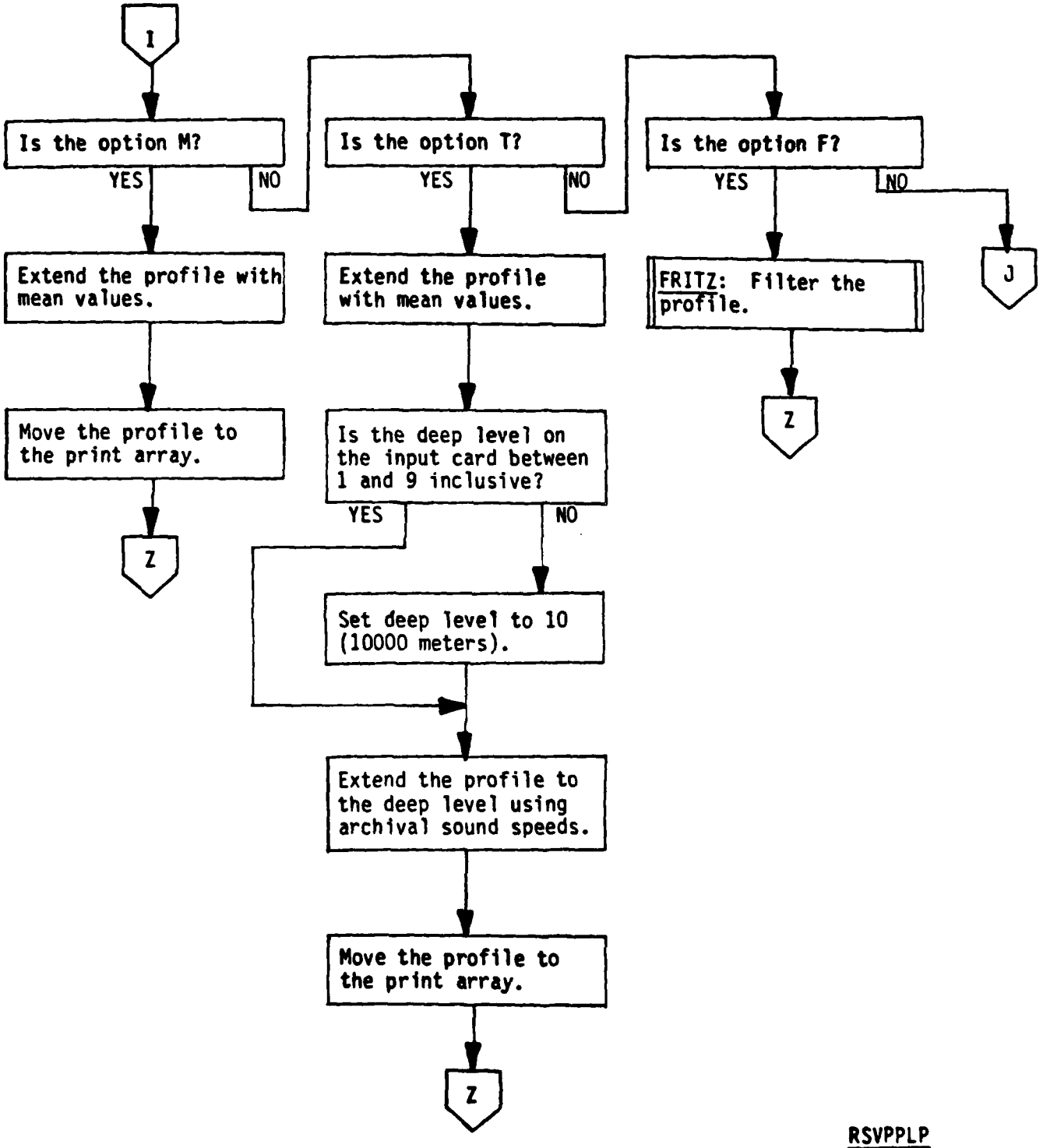
Page 3 of 7



RSVPPLP

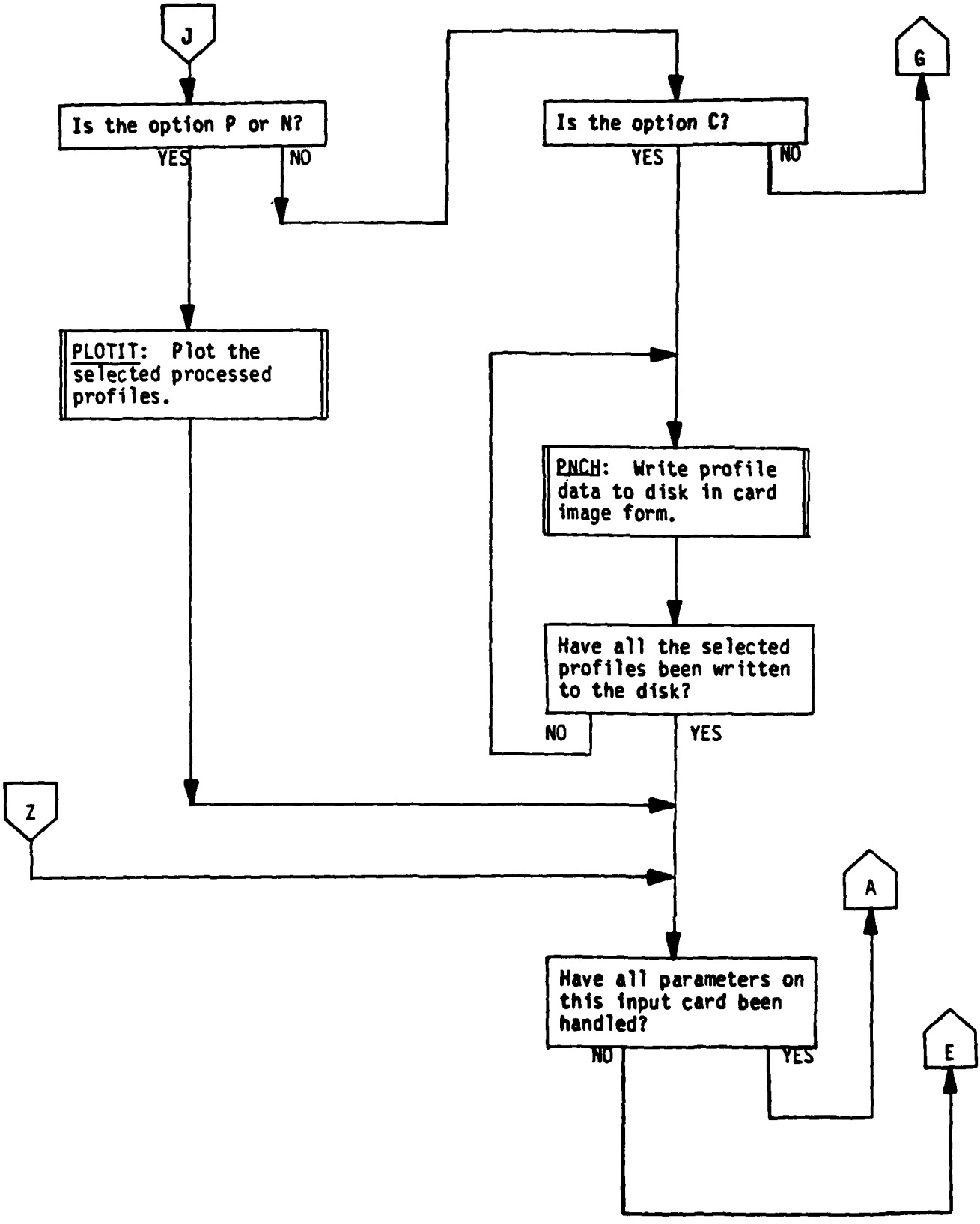
Page 4 of 7


H
Move selected sound speed profile to processing array.
Was editing specified on input card?
NO
YES
Edit the profile using data from input card.
Move the profile to the print array.
Z



RSVPPLP

Page 6 of 7


J
Is the option P or N?
YES
NO
Is the option C?
YES
NO
G
PLOTIT: Plot the selected processed profiles.
PNCH: Write profile data to disk in card image form.
Have all the selected profiles been written to the disk?
NO
YES
Z
A
Have all parameters on this input card been handled?
NO
YES
E

IV.2 Subroutine ABRT (NAME)

Function: To abort the job when an error has occurred, after printing a message giving the name of the program module that was in control when the error was detected.

Where Called: Main program

Parameter Input: NAME - Alphanumeric name of the program calling ABRT.

COMMON Input: None

Card Input: None

File Input: None

Parameter Output: None

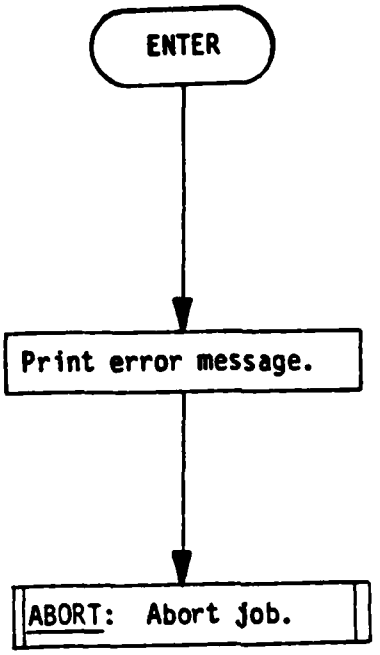
COMMON Output: None

Printer Output: The following message is printed:
**********RSVPPLP ABORTED IN name.

File Output: None

Description: ABRT prints the error message and then calls a dummy subroutine ABORT that, on the CDC 6000 series computers, causes the run to terminate abnormally.

Error Messages: None



ABRT

Page 1 of 1

IV.3 Subroutine ANNOT (ICAP1, ICAP2, LABEL, ICN)

Function: To put an annotation at the bottom of a graph of RSVP sound speed profiles, identifying the profiles and explaining the processing that has been done on each of the profiles prior to plotting.

Where Called: Subroutine PLOTIT.

Parameter Input:

ICAP1 - A 40-character alphanumeric identifier for the original RSVP run that selected the profiles according to location and month of the year.

ICAP2 - A 30-character alphanumeric identifier from the RSVPPLP card input.

LABEL - An array containing up to 5 descriptors for each profile plotted. Word 1 contains the profile index number (1-9) used to annotate each individual profile. Words 2-5 contain the codes (M,T,F,E) used to indicate the processing that has been done on the profile. See Section IV.6 (Subroutine LEGEND) for an explanation of the profile index numbers and the processing codes.

ICN - The number of sound speed profiles.

COMMON Input: None

Card Input: None

File Input: None

Parameter Output: None

COMMON Output: None

Printer Output: None

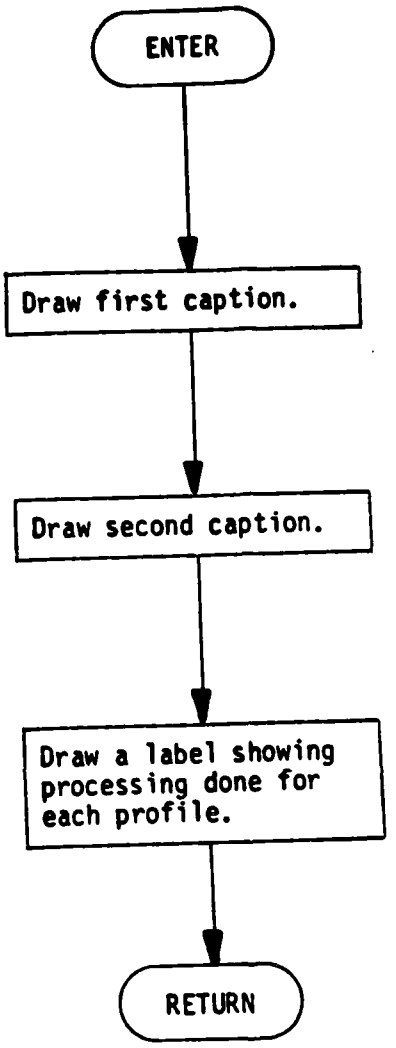
Plotter Output: At the bottom of the graph of a set of profiles, the alphanumeric identifiers in arrays ICAP1 and ICAP2 are plotted. Under these are plotted identifying labels for each of the profiles on the graph. They are of the form:

$$I - P_1 \cdots P_n$$

where I is the profile index number used to annotate the profile, and the P's indicate the processing performed on the profile.

Description: The subroutine plots the first caption, followed by the second caption, and then plots a label for each profile on the graph.

Error Messages: None



ANNOT

Page 1 of 1

IV.4 Subroutine AXES

Function: To draw and annotate depth and sound speed axes for RSVP plots.

Where Called: Subroutine PLOTIT.

Parameter Input: None

COMMON Input:

/DPLOT/	ISCALD	- Index into the depth scaling arrays used for the current graph.
	LENY	- Number of divisions on the depth axis.
	YINC	- Length in inches of a division on the depth axis.
	DPMAX	- Maximum depth in meters on the depth axis.
	YFAC	- Multiplicative factor to convert axis tic annotation to meters.
/SPLOT/	ISCALS	- Index into the sound speed scaling arrays used for the current graph.
	LENX	- Number of divisions on the sound speed axis.
	XINC	- Length in inches of a division on the sound speed axis.
	SSINC	- Length in meters/sec. represented by a division on the sound speed axis.
	SSMIN	- Minimum sound speed in meters/sec. on the sound speed axis.

Card Input: None

File Input: None

Parameter Output: None

COMMON Output: None

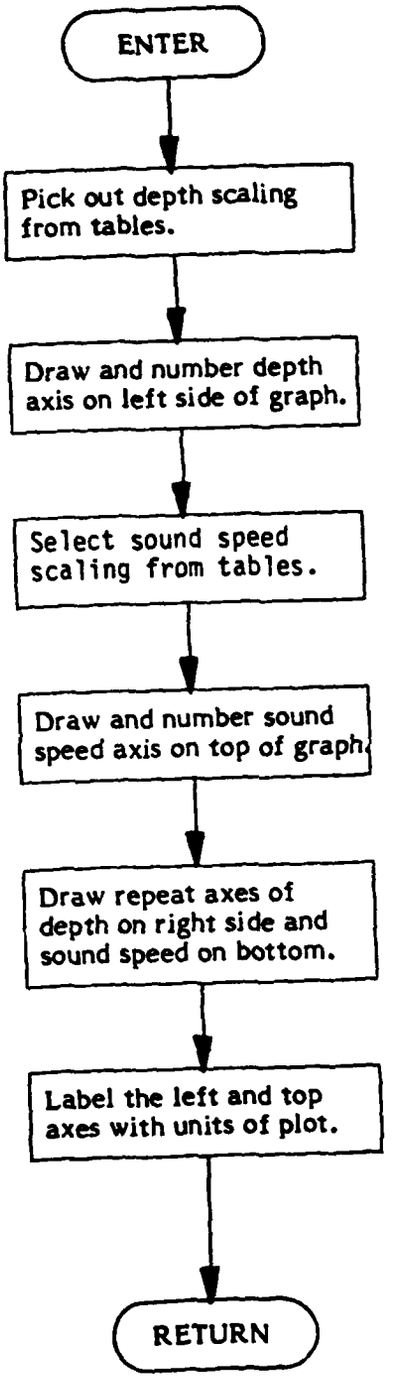
Printer Output: None

Plotter Output: A depth axis is drawn with an origin at the top left corner of the graph, with depth increasing downward. This axis is repeated on the right side of the graph. Sound speed axes are drawn on the top and bottom of the graph. The axes are labelled.

File Output: None

Description: Using the index ISCALD, the appropriate depth scaling parameters are picked out of the scaling tables, and the depth axis is drawn and numbered on the left side of the graph. Using the index ISCALS, the appropriate sound speed scaling parameters are picked out of the scaling tables, and the sound speed axis is drawn and numbered along the top of the graph. Then a repeat of the depth axis is drawn on the right side, and a repeat of the sound speed axis is drawn on the bottom. Finally, titles are drawn on the left hand and top axes.

Error Messages: None



AXES
Page 1 of 1

IV.5 Subroutine FRITZ (D, S, N, NSEL, SR, NR, ER)

Function: To filter a sound speed profile by eliminating points from it while still leaving a good representation of the curve.

Where Called: Main program

Parameter Input:

- D - An array containing the profile depths in meters.
- S - An array containing the profile sound speeds in meters/sec.
- N - The number of points in the profile.
- NSEL - The maximum number of points that remain in the profile after the elimination process.
- ER - The tolerance limit in meters/sec. used in the elimination process.

COMMON Input: None

Card Input: None

File Input: None

Parameter Output:

- SR - An array containing the sound speeds in meters/sec. for the filtered profile. Points that have been eliminated from the original array (S) are replaced by zeros in the SR array.
- NR - The number of non-zero points in the filtered profile.

COMMON Output: None

Printer Output: None

File Output: None

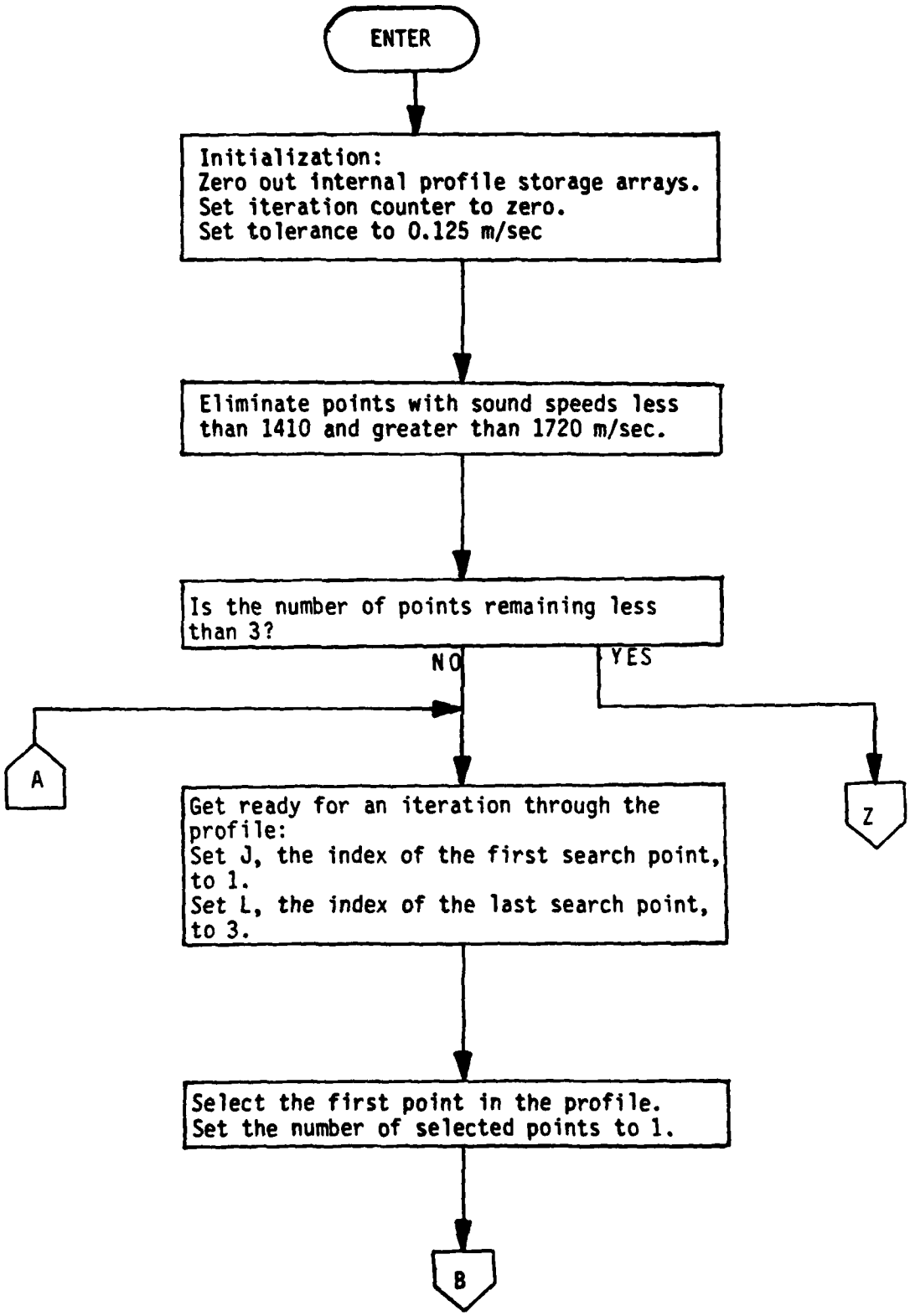
Description: The subroutine first checks to see that all the sound speeds are within an acceptable range (1410.0 - 1720.0 m/s). Those that are outside the range are discarded. If there are less than 3 points left, the filtering is not done.

The filtering process goes as follows: A line is drawn from the first to the third point in the profile, skipping the second point. Knowing the depth of the second we can find where the second point is on this line and thus know the sound speed at that point. We then compare this calculated sound speed with the observed sound speed. If they are within a certain tolerance, then a line is drawn from point 1 to point 4. The second and third points are then checked to see if they fall within the tolerance. If they do, then a line is drawn from point 1 to point 5 and so on until a preceding point does not fall within the tolerance.

When a point does fall outside the tolerance, the line is then drawn from the first point to the last point before the tolerance was exceeded and all of the preceding points (except the first) are eliminated. The endpoint of the line segment is then taken as the first point. A line is drawn to the third point after the end point and the process is repeated.

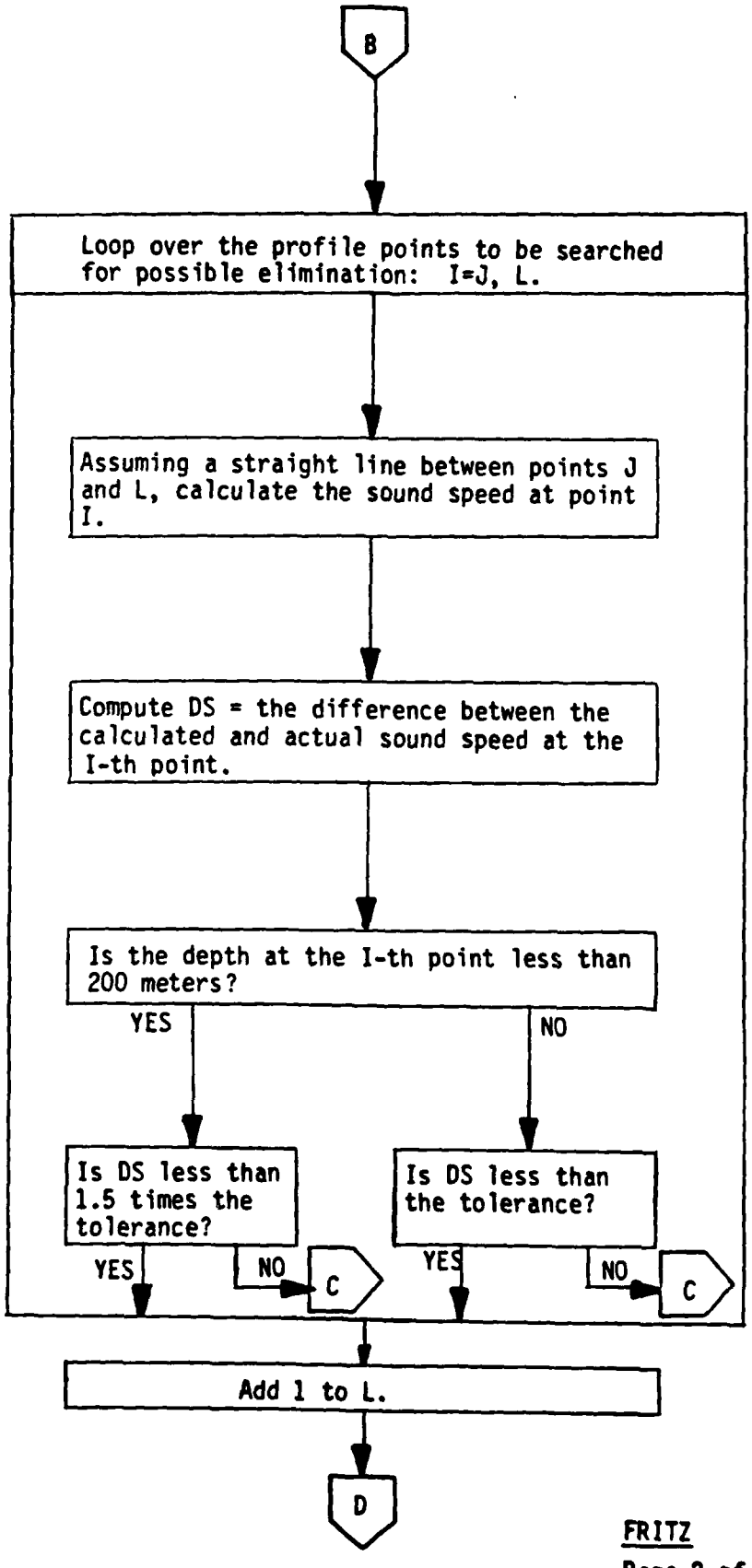
Certain points are left in the filtered profile, no matter whether they fall in the tolerance or not. These points are the first and last points in the profile and the point with the minimum sound speed.

Error Messages: None



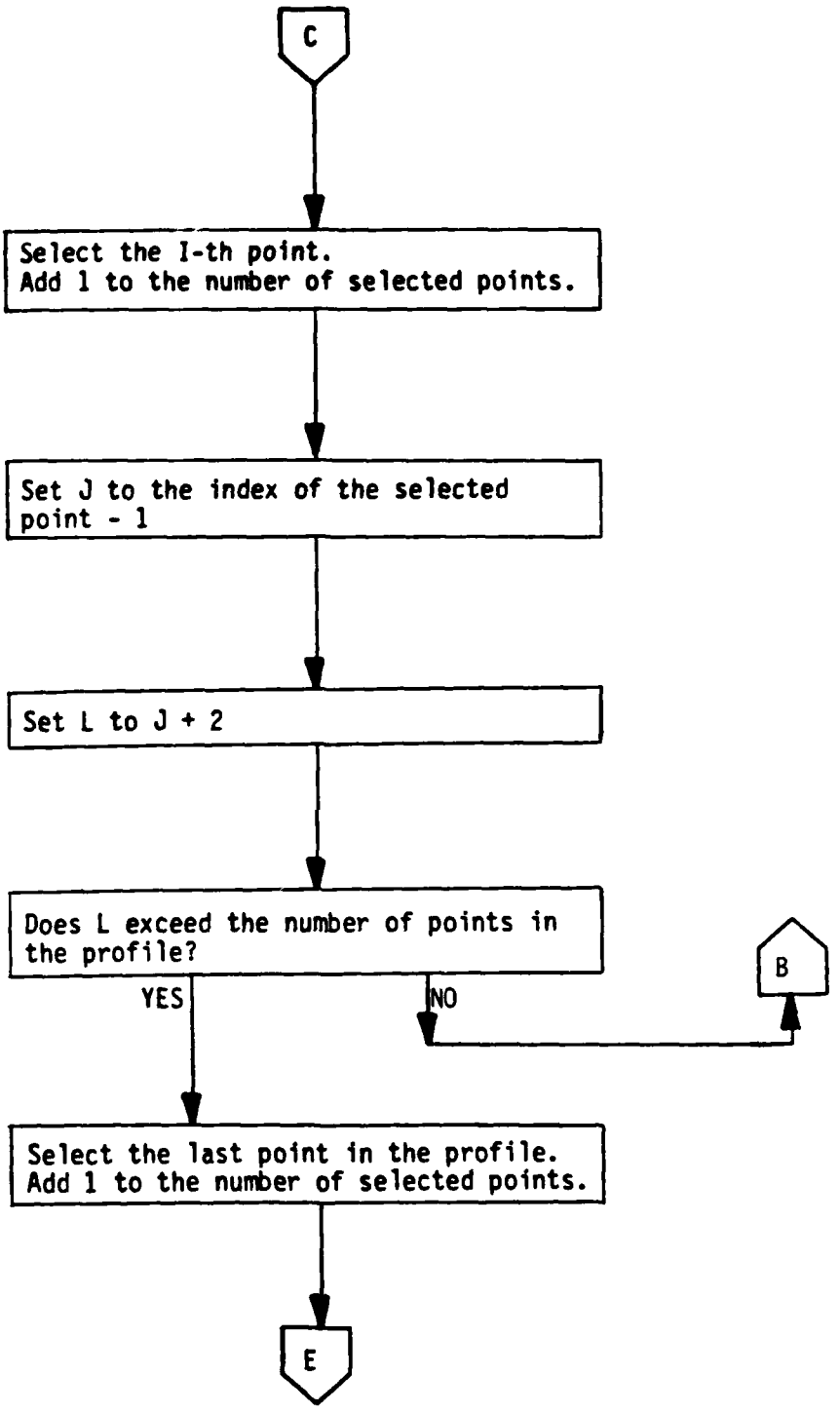
FRITZ

Page 1 of 5



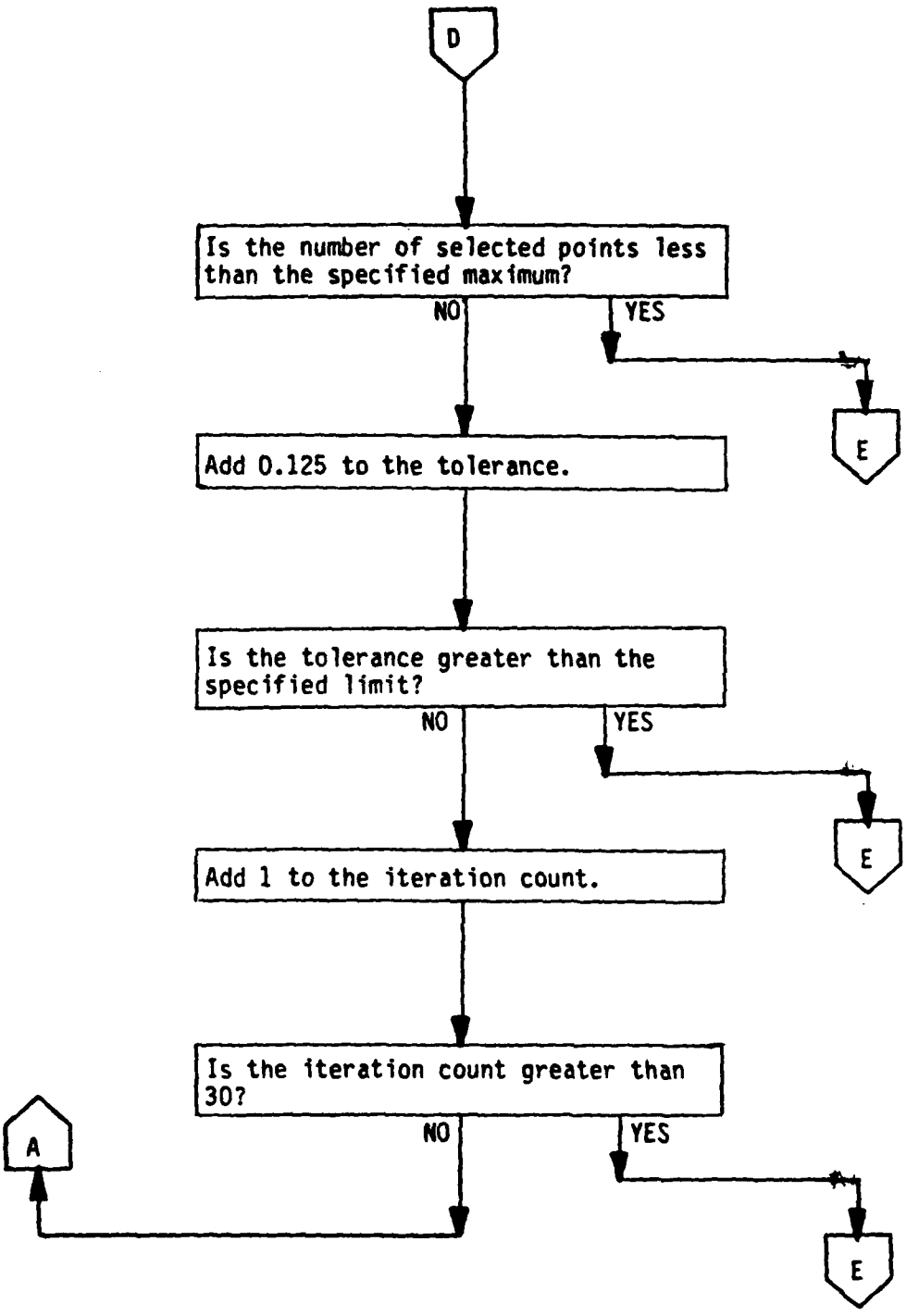
FRITZ

Page 2 of 5



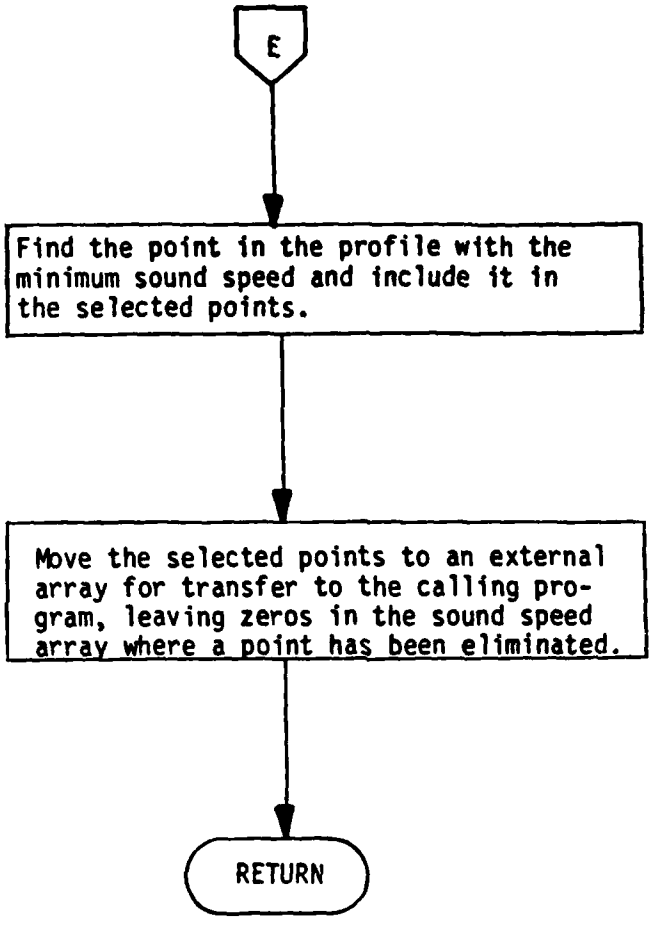
FRITZ

Page 3 of 5



FRITZ

Page 4 of 5



FRITZ

Page 5 of 5

IV.6 Subroutine LEGEND

Function: To put explanatory legends at the beginning of a set of RSVP profile plots.

Where Called: Main program

Parameter Input: None

COMMON Input: None

Card Input: None

File Input: None

Parameter Outputs: None

COMMON Output: None

Printer Output: None

Plotter Output: a) A legend containing an explanation of the numbers used to annotate each profile as follows:

1 - MODEL
2 - MEAN
3 - MINIMUM
4 - MAXIMUM
5 - MEAN - STANDARD DEVIATION
6 - MEAN + STANDARD DEVIATION
7 - REPRESENTATIVE 1
8 - REPRESENTATIVE 2
9 - REPRESENTATIVE 3

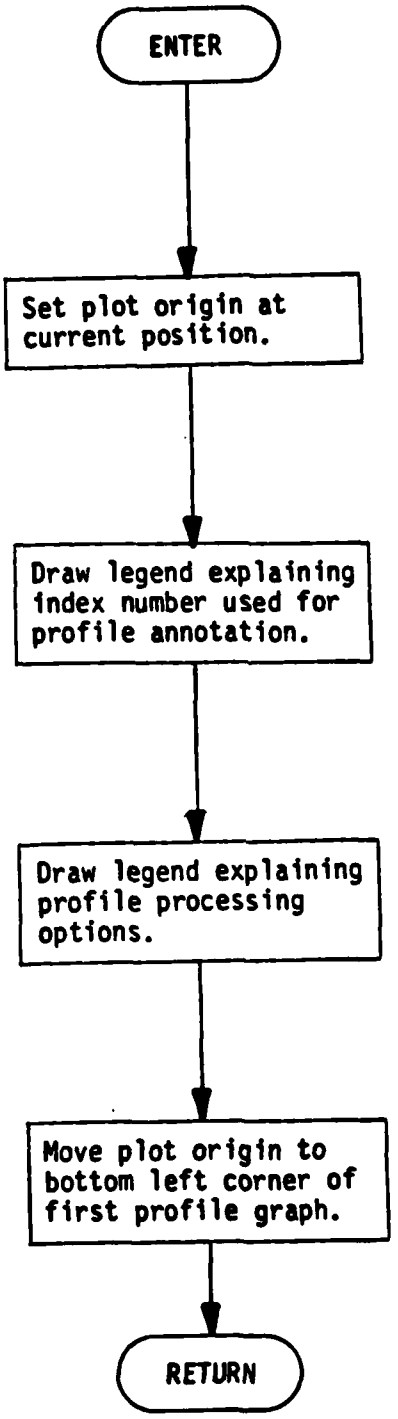
b) A legend containing an explanation of the codes used on the annotation at the bottom of the graph to describe the processing done on each profile:

M - EXTENDED WITH MEAN
T - EXTENDED WITH MEAN AND ARCHIVAL
F - FILTERED
E - EDITED

File Output: None

Description: The two legends described under Plotter Output are drawn one above the other.

Error Message: None



LEGEND

Page 1 of 1

IV.7 Subroutine PAGE (IPG, X, ISET, LBX)

Function: To store an RSVP profile for printing, and later to print it.

Where Called: Main program

Parameter Input:

- IPG - An indicator that is set by the calling program to 0 when a sound speed profile is to be stored in an internal print array, and to 1 when the sound speed profiles previously accumulated in the print array are to be printed.
- X - An array containing sound speeds in meters/sec. to be stored in the print array.
- ISET - The RSVP request number corresponding to the array.
- LBX - An alphanumeric label identifying the kind of processing that has been done on the profile (e.g. extension, filtering).

COMMON Input: None

Card Input: None

File Input: None

Parameter Output: None

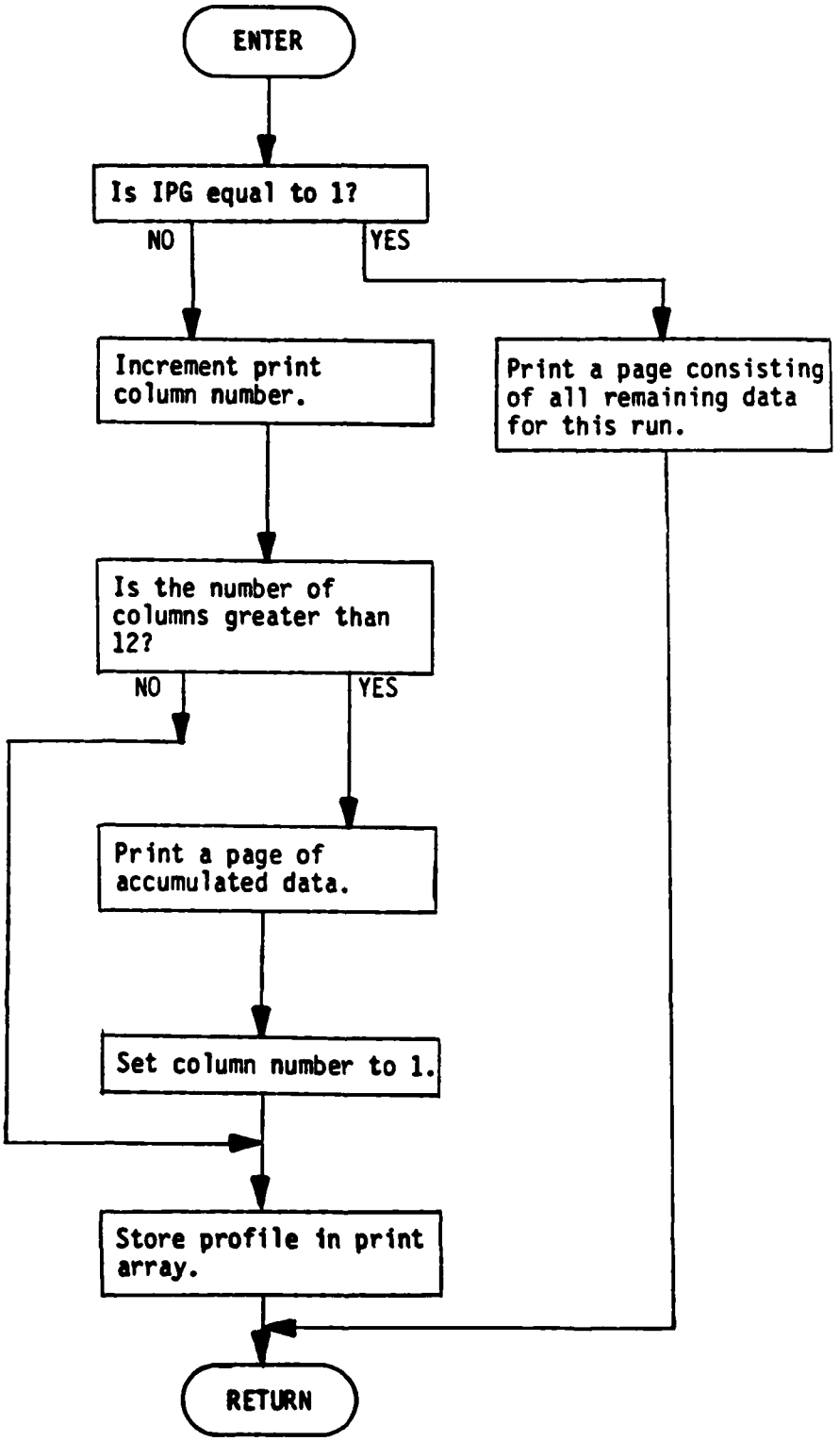
COMMON Output: None

Printer Output: A page containing up to 12 sound speed profiles.

File Output: None

Description: Each time that subroutine PAGE is called, the profile in array X is transferred to an internal array PRL. An internal print column counter, ICOL, is incremented by 1 for each array stored. When the number of columns reaches 12, or when the parameter IPG is set to 1, a page of sound speed profiles is printed, one profile per column, with the request sequence number (ISET), and the identifying label (LBX) at the top of each column.

Error Messages: None


ENTER
Is IPG equal to 1?
NO
YES
Increment print column number.
Print a page consisting of all remaining data for this run.
Is the number of columns greater than 12?
NO
YES
Print a page of accumulated data.
Set column number to 1.
Store profile in print array.
RETURN

IV.8 Subroutine PLDASH (X1, Y1, X2, Y2)

Function: To plot a dashed straight line from one point to another.

Parameter Input:

- X1 - The X-coordinate in inches of the beginning point.
- Y1 - The Y-coordinate in inches of the beginning point.
- X2 - The X-coordinate in inches of the ending point.
- Y2 - The Y-coordinate in inches of the ending point.

COMMON Input: None

Card Input: None

File Input: None

Parameter Output: None

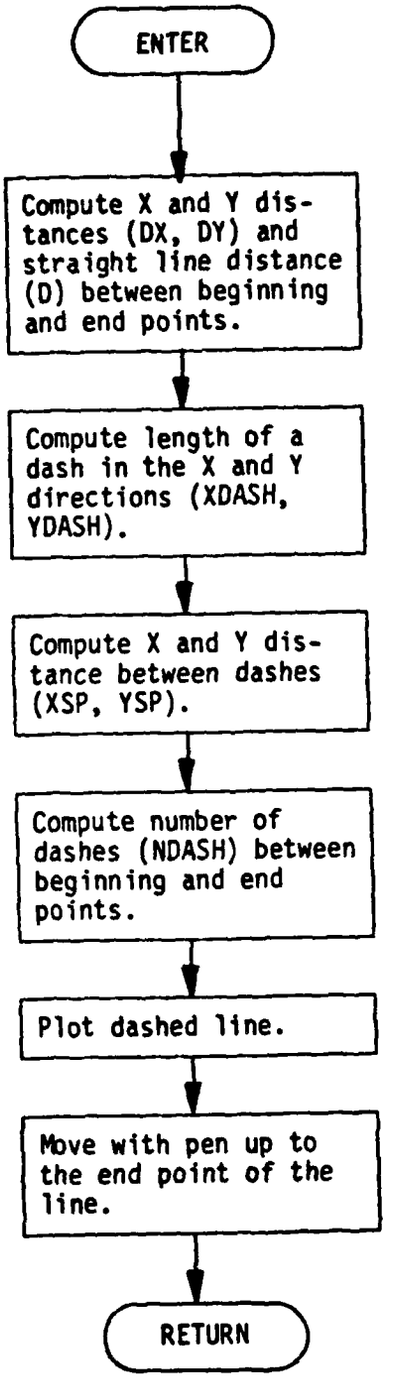
COMMON Output: None

Printer Output: None

Plotter Output: A line of dashes between (X1, Y1) and (X2, Y2).

File Output: None

Description: The length of a dash and the spacing between dashes are constants in the program. The number of dashes and the X and Y distances between dashes are calculated using these constants. Then the dashed line is drawn.



PLDASH

Page 1 of 1

IV.9 Subroutine PLDOT (X1, Y1, X2, Y2)

Function: To plot a dotted straight line from one point to another.

Parameter Input:

- X1 - The X-coordinate in inches of the beginning point.
- Y1 - The Y-coordinate in inches of the beginning point.
- X2 - The X-coordinate in inches of the ending point.
- Y2 - The Y-coordinate in inches of the ending point.

COMMON Input: None

Card Input: None

File Input: None

Parameter Output: None

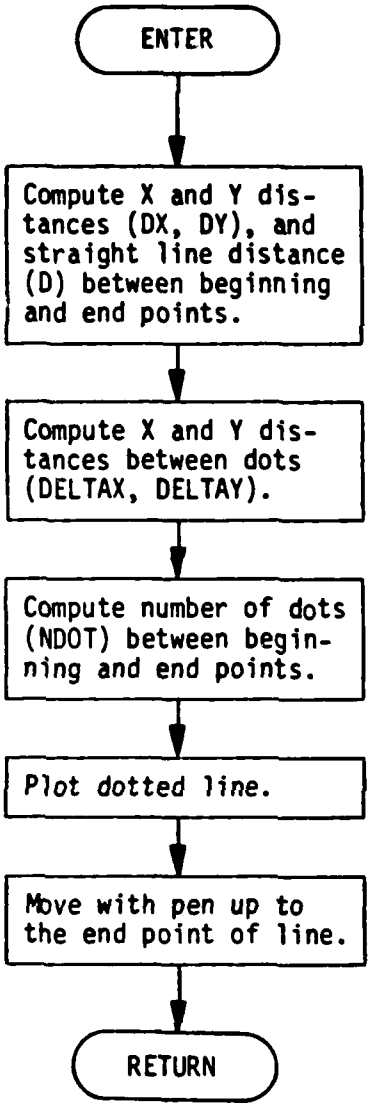
COMMON Output: None

Printer Output: None

Plotter Output: A line of dots between (X1, Y1) and (X2, Y2).

File Output: None

Description: The distance between dots is a constant in the program. Using this constant, the number of dots and the X and Y distances between dots are calculated. Then the dotted line is drawn.


ENTER
Compute X and Y distances (DX, DY), and straight line distance (D) between beginning and end points.
Compute X and Y distances between dots (DELTAX, DELTAY).
Compute number of dots (NDOT) between beginning and end points.
Plot dotted line.
Move with pen up to the end point of line.
RETURN

IV.10 Subroutine PLOTIT (D, SS, ICN, ICAP1, ICAP2, LABEL, LOPT, DMAX)

Function: To plot a set of RSVP sound speed profiles on one graph.

Where Called: Main program

Parameter Input:

- D - An array containing the profile depths in meters. These depths are the same for all profiles.
- SS - An array containing sound speeds in meters/sec. for all profiles. A zero value indicates that there is no sound speed data at that point.
- ICN - The number of sound speed profiles stored in array SS. Maximum value is 10.
- ICAP1 - A 40-character alphanumeric identifier for the RSVP run that selected the profiles according to location and month of the year.
- ICAP2 - A 30-character alphanumeric identifier from the RSVPPLP card input.
- LABEL - An array containing up to 5 descriptors for each profile plotted. Word 1 contains the profile index number (1-9) used to annotate each individual profile. Words 2-5 contain the codes (M, T, F, E) used to indicate the processing that has been done on the profile. See Section IV.6 (Subroutine LEGEND) for an explanation of the profile index numbers and the processing codes.
- LOPT - A user-specified plot option indicator. If LOPT is set to P, the profile is not annotated. If LOPT is set to N, the profile is annotated at every 5th point with the profile index number.
- DMAX - The user-specified maximum depth in meters for plotting. If DMAX is set to 0, a default of 6000 meters is assumed. If DMAX is set negative, the maximum depth is determined from the data in the D array.

Card Input: None

File Input: None

Parameter Output:

- DMAX - The maximum depth in meters for plotting.

COMMON Output:

Subroutine PLOTIT sets up COMMON storage tables that are used by its subsidiary subroutines ANNOT, AXES, LEGEND, PLPROF, and SCALDS to choose scaling factors for the plotting of depth and sound speed. There is one labelled COMMON block for depth, and another for sound speed.

Depth Scaling

/DPLOT/. NOX - Number of available depth scales. Currently set to 6.

ISCALD - Index into the depth scaling arrays used for the current graph.

The following arrays contain NOX entries, one for each depth scale:

LENY - Number of divisions on the depth axis.

YINC - Length in inches of a division on the depth axis.

DPINC - Length in meters represented by a division on the depth axis.

DPMAX - Maximum depth in meters on the depth axis.

YFAC - Multiplicative factor to convert axis tic annotation to meters.

The values in these arrays are set as follows:

Array Index	LENY	YINC	DPINC	DPMAX	YFAC
1	6	1.4	40.	240.	1.
2	6	1.4	100.	600.	100.
3	6	1.4	200.	1200.	100.
4	6	1.4	500.	3000.	100.
5	6	1.4	1000.	6000.	1000.
6	6	1.4	2000.	12000.	1000.

Sound speed scaling

/SPLOT/ NOY - Number of available sound speed scales. Currently set to 6.

ISCALS - Index into the sound speed scaling arrays used for the current graph.

The following arrays contain NOY entries, one for each sound speed scale:

LENX - Number of divisions on the sound speed axis.

XINC - Length in inches of a division on the sound speed axis.

SSINC - Length in meters/sec. represented by a division on the sound speed axis.

SSMIN - Minimum sound speed in meters/sec. on the sound speed axis.

SSMAX - Maximum sound speed in meters/sec. on the sound speed axis.

The values in these arrays are set as follows:

Array Index	LENX	XINC	SSINC	SSMIN	SSMAX
1	6	1.0	20.	1440.	1560.
2	6	1.0	20.	1480.	1600.
3	6	1.0	40.	1400.	1640.
4	6	1.0	40.	1440.	1680.
5	6	1.0	40.	1480.	1720.
6	6	1.0	100.	1200.	1800.

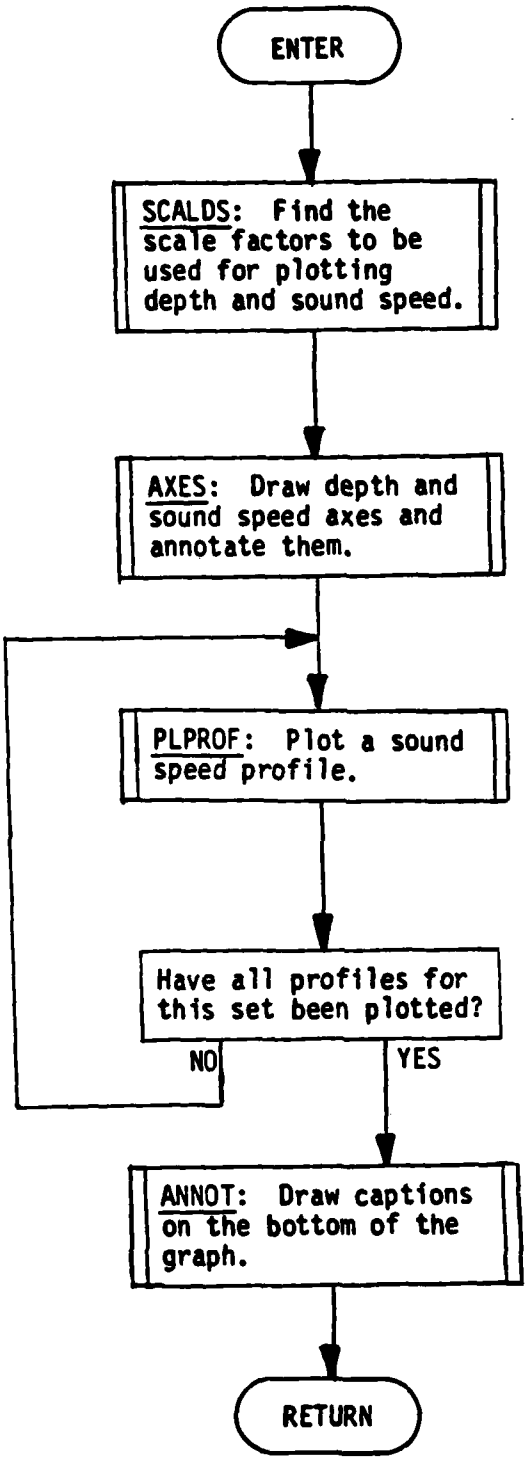
Printer Output: None

Plotter Output: Output from PLOTIT is one graph of sound speed profiles. The axes are annotated, and identifying titles are drawn. More than one sound speed profile may be drawn on the graph. Each profile may be annotated.

File Output: None

Description: Subroutine PLOTIT calls subroutine SCALDS to determine the scaling to be used for plotting depth and sound speed. It then calls subroutine AXES to draw and annotate the axes for the graph, subroutine PLPROF to plot the profiles, and subroutine ANNOT to draw captions at the bottom of the graph.

Error Messages: None



PLOTIT

Page 1 of 1

IV.11 Subroutine PLPROF (D, S, LABP, LOPT)

Function: To plot an RSVP sound speed profile.

Where Called: Subroutine PLOTIT.

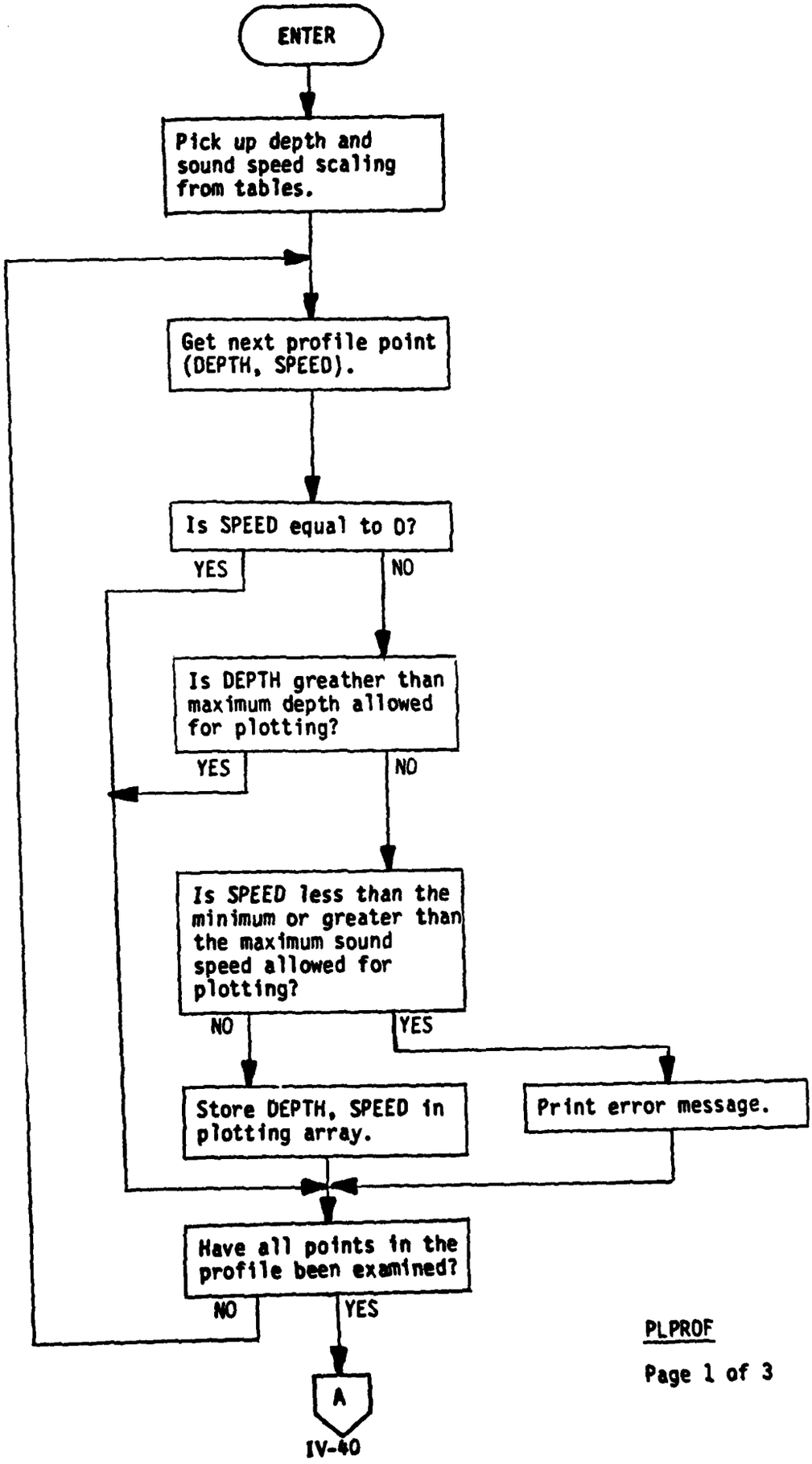
Parameter Input:

	D	- An array containing profile depths in meters.
	S	- An array containing sound speeds in meters/sec. A zero value indicates that there is no sound speed data at that point.
	LABP	- A profile index number used for annotation on the profile plot. See subroutine LEGEND for a description of this index number.
	LOPT	- A user-specified plot option indicator. If LOPT is set to P, the profile is not annotated. If LOPT is set to N, the profile is annotated with the profile index number (LABP) at every 5th point.

COMMON Input:

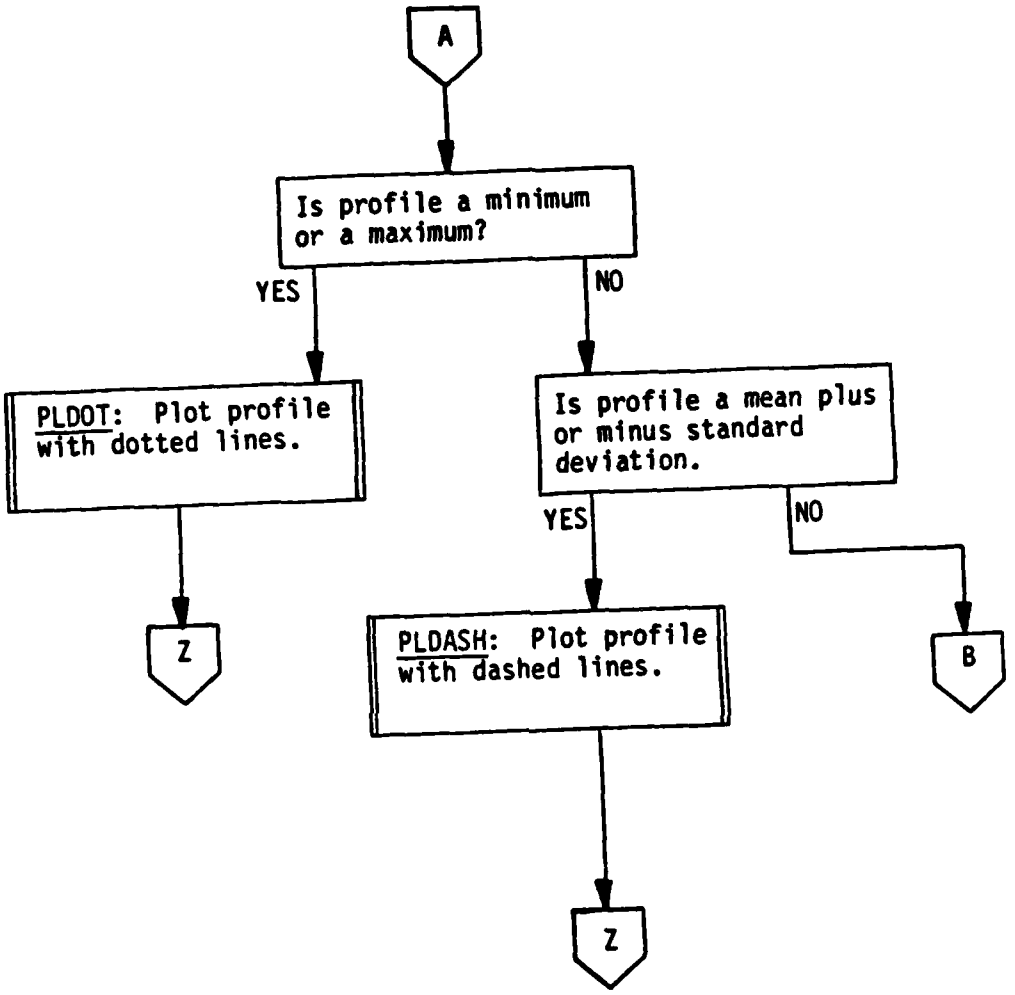
/DPLOT/	ISCALD	- Index into the depth scaling arrays used for the current graph.
	YINC	- Length in inches of a division on the depth axis.
	DPINC	- Length in meters represented by a division on the depth axis.
	DPMAX	- Maximum depth in meters on the depth axis.
/SPLOT/	ISCALS	- Index into the sound speed scaling arrays used for the current graph.
	XINC	- Length in inches of a division on the sound speed axis.
	SSINC	- Length in meters/sec. represented by a division on the sound speed axis.
	SSMIN	- Minimum sound speed in meters/sec. on the sound speed axis.
	SSMAX	- Maximum sound speed in meters/sec. on the sound speed axis.

Card Input:	None
File Input:	None
Parameter Output:	None
COMMON Output:	None
Printer Output:	Error Message. See below for details.
File Output:	None
Plotter Output:	Subroutine PLPROF plots one profile. If LOPT is set to N, a plot annotated at every 5th point with the profile index number (LABP) is produced. If LOPT is set to P, a plot is produced with no annotation.
Description:	The profile points that have zero sound speed or depths deeper than the maximum depth for plotting are eliminated from the profile. Then, using the scaling indicated by the values in ISCALD and ISCALS, the profile is plotted, either annotated or not, depending on the setting of LOPT.
Error Messages:	The subroutine checks that the sound speeds to be plotted are within the specified minimum and maximum sound speed values. If any are not, an error message is printed, and processing continues. See Section III.1.2 for a detailed description of the error messages.



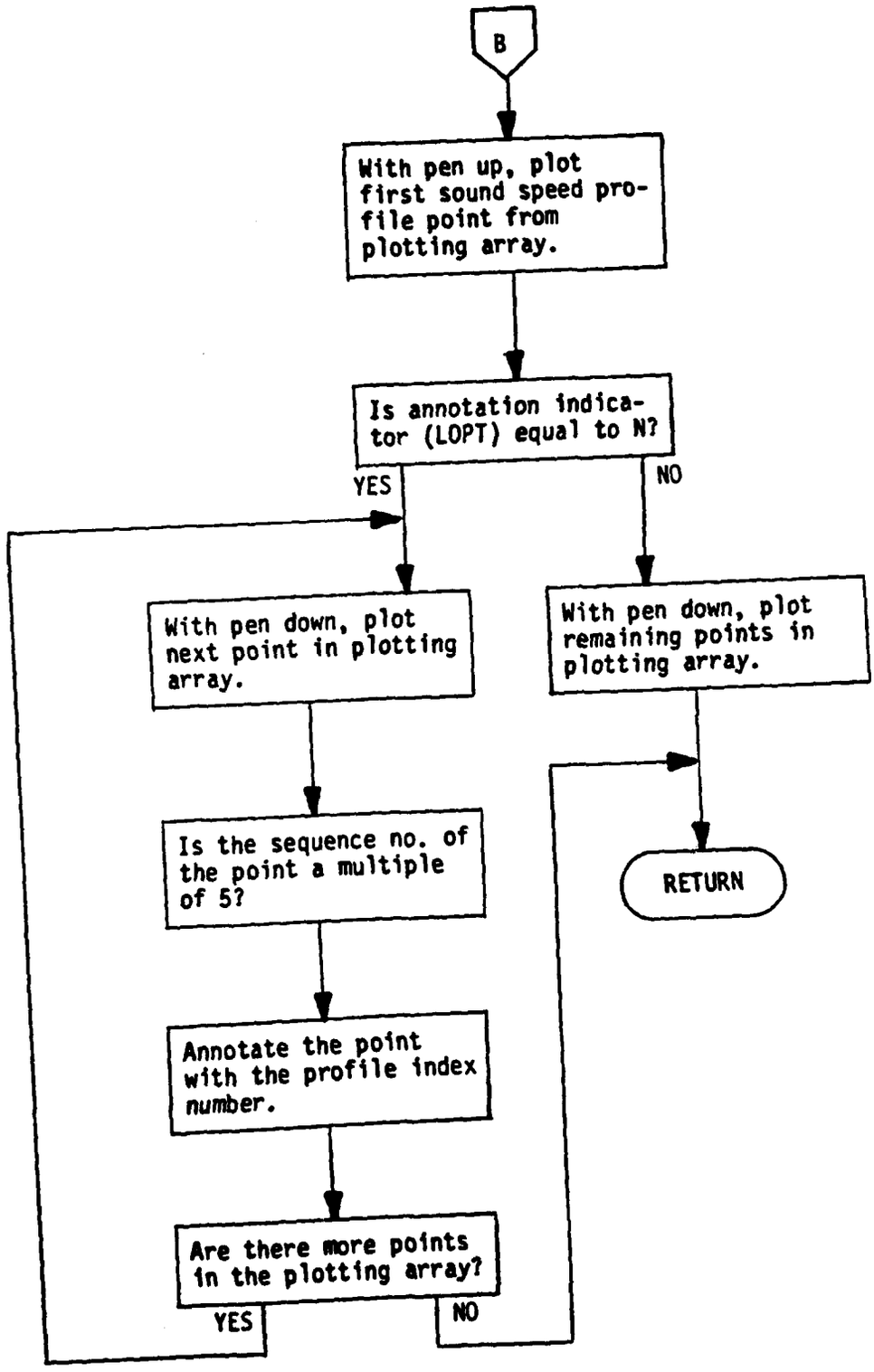
PLPROF

Page 1 of 3



PLPROF

Page 2 of 3


B
With pen up, plot first sound speed profile point from plotting array.
Is annotation indicator (LOPT) equal to N?
YES
NO
With pen down, plot next point in plotting array.
With pen down, plot remaining points in plotting array.
Is the sequence no. of the point a multiple of 5?
RETURN
Annotate the point with the profile index number.
Are there more points in the plotting array?
YES
NO

PLPROF

IV.12 Subroutine PNCH (D, S, ICAP1, ICAP2, ICAP3)

Function: To write a sound speed profile to a disk file in card image form for punching.

Where Called: Main program.

Parameter Input:

- D - Array containing profile depths in meters.
- S - Array containing profile sound speeds in meters/sec.
- ICAP1 - A 40-character alphanumeric identifier, from the original RSVP request. Written in columns 1-40 of the first card image for the profile.
- ICAP2 - A 30-character alphanumeric identifier, from the input parameter card. Written in columns 41-70 of the first card image for the profile.
- ICAP3 - 10 alphanumeric characters identifying the profile type and the processing done on it. Written in columns 71-80 of the first card image for the profile.

COMMON Input: None

Card Input: None

File Input: None

Parameter Output: None

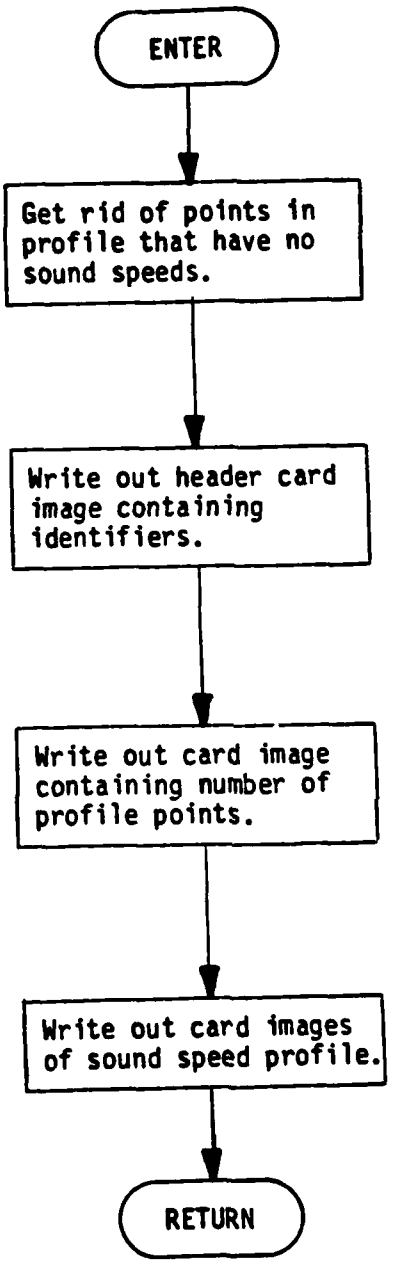
COMMON Output: None

Printer Output: None

File Output: On logical unit 3, card images of the sound speed profile. See Section III-3 for a description of the file.

Description: A header card containing identifiers for the profile is written, followed by a card containing the number of points in the profile. Then the profiles are written out, 4 points per card image.

Error Messages: None



PNCH

Page 1 of 1

IV.13 Subroutine SCALDS (D, SS, ICN, DMAX)

Function: To determine the scaling for depths and sound speeds on a multi-profile plot.

Where Called: Subroutine PLOTIT

Parameter Input:

- D - An array containing profile depths in meters. These depths are the same for all profiles.
- SS - An array containing sound speeds in meters/sec. for all profiles. A zero value indicates that there is no sound speed data at that point.
- ICN - The number of sound speed profiles stored in array SS. Maximum value is 10.
- DMAX - The user-specified maximum depth in meters for plotting. If DMAX is set to zero, a default of 6000 meters is assumed. If DMAX is set negative, the maximum depth is determined from the data in the D array.

COMMON Input:

- /DPLOT/ NOX - Number of available depth scales.
- DPMAX - Array of maximum depths in meters, one for each depth scale.
- /SPLOT/ NOY - Number of available sound speed scales.
- SSMIN - Array of minimum sound speeds in meters/sec., one for each sound speed scale.
- SSMAX - Array of maximum sound speeds in meters/sec., one for each sound speed scale.

Card Input: None

File Input: None

Parameter Output: DMAX - Maximum depth in meters for plotting.

COMMON Output:

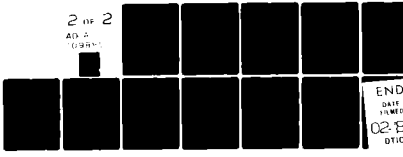
- /DPLOT/ ISCALD - An index into the tables used for scaling the depth for plotting.
- /SPLOT/ ISCALS - An index into the tables used for scaling the sound speed for plotting.

Printer Output: None

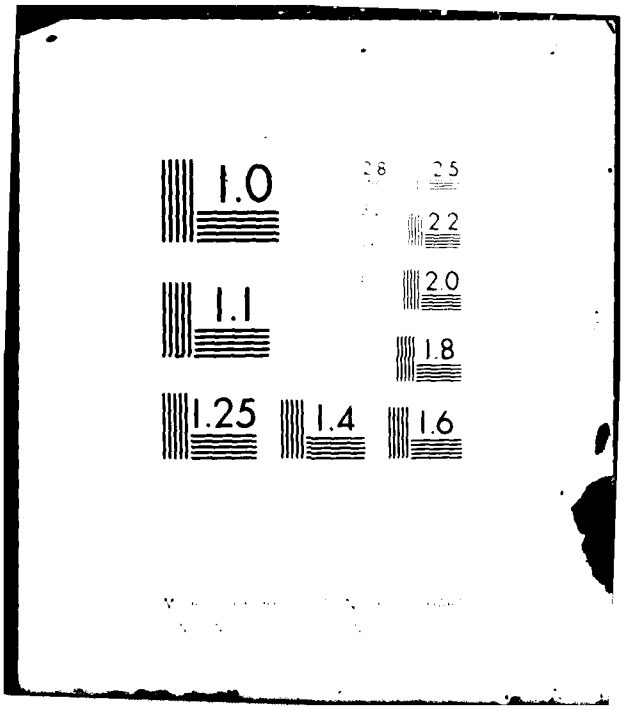
File Output: None

AD-A109 855 OCEAN DATA SYSTEMS INC ROCKVILLE MD F/G 20/1
RSVP UPGRADE AND MAINTENANCE.(U)
DEC 81 J WEBSTER N00014-78-C-0818
UNCLASSIFIED NL

2 OF 2
AD A
(GRAY)



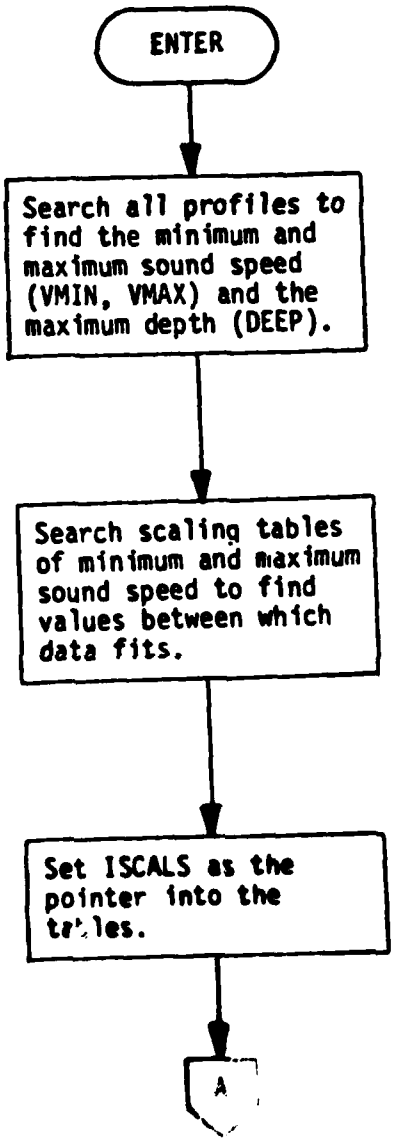
END
DATE FILMED
02-82
DTIC


1.0
2.8
2.5
2.2
1.1
2.0
1.8
1.25
1.4
1.6

Description: The subroutine searchs through the multi-profile array to find minimum and maximum sound speeds over all the profiles. It then searches through the tables of sound speed minima and maxima until it finds a set between which these computed minimum and maximum will fit. If a fit cannot be found, the broadest scale available is selected.

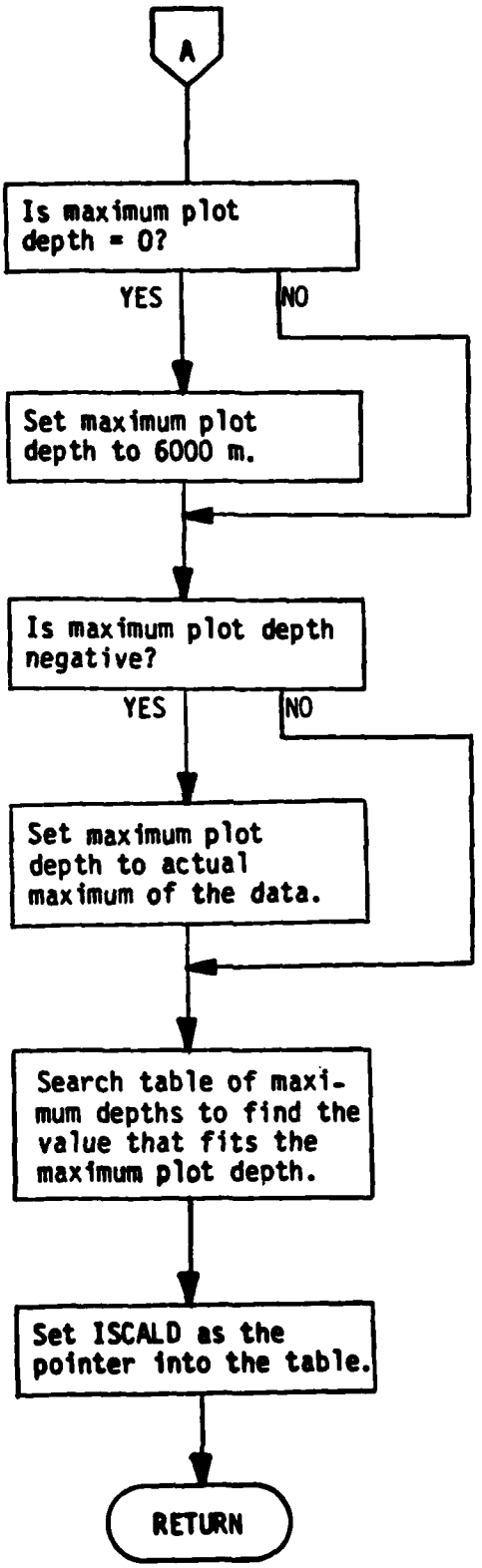
The subroutine finds the deepest depth at which sound speed data exist in the multi-profile array. If DMAX has been specified as a negative value, then DMAX is reset to this maximum value. If DMAX has been specified as zero, then DMAX is reset to 6000. Otherwise, DMAX is left as originally specified. The value of DMAX is then used to search through the tables of depth maxima to find a value which will fit the value of DMAX. If none is found, then the deepest maximum available is used.

Error Messages: None



SCALDS

Page 1 of 2



SCALDS

Page 2 of 2

V. CROSS REFERENCE CHARTS

V.1 Subroutine Cross Reference

Calling Program \ Subroutine Called	ABRT	ANNOT	AXES	FRITZ	LEGEND	PAGE	PLDASH	PLDOT	PLOTIT	PLPROF	PNCH	SCALDS
MAIN PROGRAM	X			X	X	X			X		X	
ABRT												
ANNOT												
AXES												
FRITZ												
LEGEND												
PAGE												
PLDASH												
PLDOT												
PLOTIT		X	X						X			X
PLPROF							X	X				
PNCH												
SCALDS												

V.2 COMMON Cross Reference

COMMON Block	Variable	MAIN	ABRT	ANNOT	AXES	FRITZ	LEGEND	PAGE	PLDASH	PLDOT	PLOTIT	PLPROF	PNCH	SCALDS
DPLOT	DPINC				R					D	R			
	DPMAX				R					D	R			R
	ISCALD				R						R			D
	LENY				R					D	R			
	NOX									D	R			R
	YFAC				R					D				
	YINC				R					D	R			
SPLOT	ISCALS				R						R			D
	LENX				R					D				
	NOY									D				R
	SSINC				R					D	R			
	SSMAX									D	R			R
	SSMIN				R					D	R			R
	XINC				R					D	R			

R — The indicated program refers to the specified COMMON variable.

D — The specified COMMON variable is defined in the indicated program.

VI. USER'S GUIDE

VI.1 File Identification

The FORTRAN source and the binary code for RSVPPLP are stored at DTNSRDC and at Eglin. The file names are the same at both places. The file identifiers is shown below.

FORTRAN Source (Program Library)	Binary Code	ID at Eglin	SN at Eglin	ID at NSRDC
PVEHRSVPPLOTPUNCHPL	PVEHRSVPPLOTPUNCHLGO	KM	USET1	PVEH

VI.2 Sample Jobs

Sample job streams for executing RSVPPLP at Eglin and DTNSRDC are presented on the following pages.

1. Run at Eglin to produce a Zeta plot and to punch sound speed profiles.

```
X107,T375,P4.                                  MASHIMOTO     1608  921HVT16H2C        26
COMMENT.
COMMENT.                                       RUN RSVPPLP AT EGLIN  TO
COMMENT.                                       MAKE A ZETA PLOT AND TO
COMMENT.                                       PUNCH SOUND SPEED PROFILES.
COMMENT.
ATTACH,LGO,PVEHRSVPPLOTPUNCHLGO,ID=KM,SN=USET1,MR=1.
ATTACH,TAPE1,RSVPOUT,ID=KM,SN=USET1,MR=1.
ATTACH,PLOT,ZETAPLOT,ID=MZ,SN=USET2,MR=1.
REQUEST,PLTCDS,*Q.
REQUEST,TAPE3,*Q.
LOAD,PLOT.
LGO.
ROUTE,TAPE3,DC=PU,TID=AD.
ROUTE,PLTCDS,DC=PU,TID=AD,EC=80COL.
00000000000000000000000 <-- 7/8/9 card
041TFCP                                          MODEL
047TFCP                                          REP1
048TFCP                                          REP2
049TFCP                                          REP3
00000000000000000000000 <-- 6/7/8/9 card
```

2. Run at Eglin to punch sound speed profiles.

```
X107,T375,P4.                                  MASHIMOTO     1608  921HVT16H2C        26
COMMENT.
COMMENT.                                       RUN RSVPPLP AT EGLIN TO PUNCH
COMMENT.                                       SOUND SPEED PROFILES.
COMMENT.
ATTACH,LGO,PVEHRSVPPLOTPUNCHLGO,ID=KM,SN=USET1,MR=1.
ATTACH,TAPE1,RSVPOUT,ID=KM,SN=USET1,MR=1.
REQUEST,TAPE3,*Q.
LGO.
ROUTE,TAPE3,DC=PU,TID=AD.
00000000000000000000000 <-- 7/8/9 card
041TFC                                           MODEL
047TFC                                           REP1
048TFC                                           REP2
049TFC                                           REP3
00000000000000000000000 <-- 6/7/8/9 card
```

3. Run at Eglin to produce a deferred plotting file to preview on the Tektronix.

```
X107,T375,P4.                                  MASHIMOTO     1608  9218V116H2C        26
COMMENT.
COMMENT.                                       RUN RSVPPLP AT EGLIN TO GET A
COMMENT.                                       DEFERRED PLOTTING FILE FOR USE
COMMENT.                                       WITH THE TEKTRONIX PREVIEWER.
COMMENT.
ATTACH,LGO,PVEHRSVPPLOTPUNCHLGO,ID=KM,SN=USET1,MR=1.
ATTACH,TAPE1,RSVPOUT,ID=KM,SN=USET1,MR=1.
REQUEST,PLTCDS,*PF,SN=USET1.
ATTACH,TEK,TEKPROCFILE,ID=KW,SN=USET2,MR=1.
BEGIN,MAKE,TEK,RSVPPLP.
CATALOG,PLTCDS,RSVPPLOTTEST,ID=KM.
000000000000000000000 ← 7/8/9 card
041TFP                                          MODEL
047TFP                                          REP1
048TFP                                          REP2
049TFP                                          REP3
000000000000000000000 ← 6/7/8/9 card
```

4. Run at Carderock to produce a Calcomp plot and to punch sound speed profiles.

```
PUJAW,CM60000,T50,P4,MT1.
CHARGE,PUJA,IWBGT18919.
COMMENT.                                       RUN RSVPPLP AT CARDEROCK
COMMENT.                                       TO PRODUCE CALCOMP PLOTS
COMMENT.                                       AND PUNCHED SOUND SPEED PROFILES.
COMMENT.
ATTACH,LGO,PVEHRSVPPLOTPUNCHLGO,ID=PVEH,MR=1.
ATTACH,TAPE1,RSVPOUT,ID=PVEH,MR=1.
LABEL,TAPE20,D=HY,R,RING,L=RSVPPLOT,VSN=CK0837.
ROUTE,TAPE3,DC=PU,DEF,TID=C.
ATTACH,CALC936.
LIBRARY,CALC936.
LGO.
000000000000000000000 ← 7/8/9 card
011TFCP                                         MODEL
02256CP                                         MEAN +,- S. D.
03134CP                                         MODEL,MIN,MAX
047TFCP                                         REP1
048TFCP                                         REP2
057TFCP                                         REP1
058TFCP                                         REP2
000000000000000000000 ← 6/7/8/9 card
```

ODSI OCEAN DATA SYSTEMS, INC.
6000 EXECUTIVE BLVD., ROCKVILLE, MARYLAND 20852 • 301/881-3031

MEMORANDUM

To: George Kerr, NORDA Code 321

From: Jacqueline Webster JW

Date: December 9, 1981

The Cyber Control Language (CCL) procedure for running RSVP has been modified as you requested. It is stored as cycle 4 of file RSVPPROC, ID=KT. A second procedure called GETDATA was added to the procedure file. The procedure for running RSVP (PRSVP) invokes the GETDATA procedure.

You no longer need to specify the magnetic tape Volume Serial Number (VSN) on your BEGIN command when running the procedure. Instead, you can specify the ocean basin on the BEGIN command, and the procedure will automatically mount the appropriate tape. If there is a problem with the tape, the procedure will mount the backup tape. You can, however, still specify your own tape serial number on the BEGIN card, and this will override the automatic mount.

The order of the parameters on the BEGIN command has been changed slightly. The following is a description of the parameters for the procedure:

.PROC, PRSVP, OCNBASN, STORFIL, TAPENUM,
EXTRACT=NO, SAVE=NO, PLOT=NO, CARDS=NO, PROCFIL=#FILE

OCNBASN — Name of the ocean basin — ATLARC, CARIB, CENATL, CENPAC, INDIAN, MEDSEA, NORATL, NORPAC, PHIOKJP, or SATLPAC

STORFIL — Name of the permanent file on which the extracted RSVP data is to be stored. The ID will be KM. This parameter is used only when the parameter SAVE is set to YES.

TAPENUM — Volume Serial Number (VSN) of tape to be used as input to RSVP. This parameter is optional; when used, it overrides the automatic tape mount.

EXTRACT — Set to YES to extract RSVP data, set to NO otherwise.

SAVE — Set to YES to save the extracted RSVP data, set to NO otherwise.

PLOT — Set to YES to plot the extracted RSVP data, set to NO otherwise.

CARDS — Set to YES to select sound speed profiles from the extracted RSVP profiles, and to store these selected profiles as card images on disk in a format accepted by the Model Interface program.

Attached are a tabulation of the tape serial numbers and a listing of the CCL procedure.

RSVP Input Tapes

Ocean Basin	Tape Label	Original		Backup	
		Eglin VSN	NORDA VSN	Eglin VSN	NORDA VSN
ATLARC	PUJAATLARC	5388	1346	11697	1307
CARIB	PUJACARIB	4050	1313	12100	1222
CENATL	PUJACENATL	0774	1499	0863	1495
CENPAC	PUJACENPAC	0462	1326	11020	1212
INDIAN	PUJAINDIAN	3799	1228	5150	1496
MEDSEA	PUJAMEDSEA	4036	1309	16848	1357
NORATL	PUJANORATL	0400	1493	6135	1287
NORPAC	PUJANORPAC	10575	1234	16386	1355
PHIOKJP	PUJAPHIOKJP	10996	1213	12645	1501
SATLPAC	PUJASATLPAC	15056	1368	16382	1334

```
.PROC,PRSUP,OCNBASN,STORFIL,TAPENUM=,
 EXTRACT=NO,SAVE=NO,PLOT=NO,CARDS=NO,PROCFIL=*FILE.
.*
.*                                        -----GET INPUT DATA FOR RSUP-----
IFE,$EXTRACT$.EQ.$YES$,JMPA.
REQUEST,TAPE60,*PF.
BEGIN,GETDATA,PROCFIL,OCNBASN,TAPENUM.
REWIND,DATIN.
ATTACH,TAPE4,PUEHDEEPSSARCHIVAL,ID=KM,MR=1.
.*                                        -----RUN RSUP PROGRAM-----
ATTACH,BIN,PUEHRSUPLGO,ID=KM,MR=1.
LDSET,PRESET=ZERO.
LOAD,BIN.
EXECUTE,RSUP,DATIN.
.*                                        -----SAVE RSUP OUTPUT DATA-----
IFE,$SAVE$.EQ.$YES$,JMPB.
CATALOG,TAPE60,STORFIL,ID=KM.
REWIND,TAPE1,TAPE60.
COPY,TAPE60,TAPE1.
RETURN,TAPE60.
ENDIF,JMPB.
ENDIF,JMPA.
.*
IFE,$PLOT$.EQ.$YES$.OR.$CARDS$.EQ.$YES$,JMPH.
.*                                        ---RUN RSUPPLOTPUNCH PROGRAM---
IFE, .NOT. FILE (TAPE1,AS),ATTAPE1.
ATTACH,TAPE1,STORFIL,ID=KM,MR=1.
ENDIF,ATTAPE1.
REWIND,TAPE1.
.*
ATTACH,LGO,PUEHRSUPPLOTPUNCHLGO,ID=KM,MR=1.
REQUEST,PLTCDS,*Q.
```

```
REQUEST,TAPE3,*PF.
.*
IFE,$PLOT$.EQ.$YES$,JMPD.
ATTACH,DRAW,ZETAPLOT185,ID=MZ,MR=1.
LOAD,DRAW.
LOAD,LGO.
NOGO,RSUPPLP.
ENDIF,JMPD.
.*
IFE, $CARDS$ .EQ. $YES$  .AND. $PLOT$ .EQ. $NO$, JMPE.
LOAD,LGO.
NOGO,RSUPPLP.
ENDIF,JMPE.
.*
RSUPPLP.
IFE,$CARDS$.EQ.$YES$,JMPG.
CATALOG,TAPE3,PUNCH,ID=KM.
ENDIF,JMPG.
.*
IFE,$PLOT$.EQ.$YES$,JMPH.
ROUTE,PLTCDS,DC=PR,TID=AC,FC=U9.
ENDIF,JMPH.
.*
REVERT.
.*
.*****************************************************************
.*
.PROC,GETDATA,OCNBASN,TAPENUM=.
.*---------GET INPUT DATA FOR RSUP------
.* IF RSUP INPUT FILE IS ALREADY
.* ATTACHED, ASSUME THAT THE USER WANTS
.* TO USE HIS OWN FILE.
.* IF A TAPE NUMBER IS SPECIFIED BY THE
```

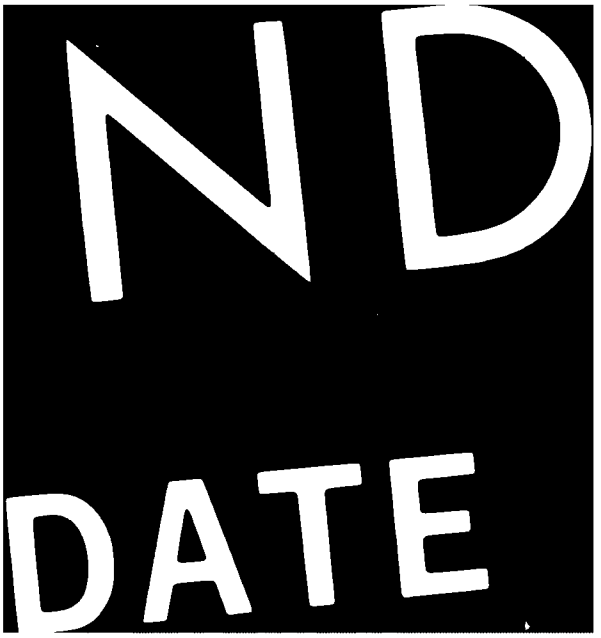
```
.* USER, THEN THIS OVERRIDES THE REGULAR
.* RSVP TAPE.
.* OTHERWISE ATTACH THE APPROPRIATE TAPE
.* FOR THE SPECIFIED OCEAN BASIN.
.* IF THE TAPE IS BAD, THEN ATTACH THE
.* BACKUP TAPE.
.*------------CHECK FOR FILE INPUT
IFE,.NOT.FILE(DATIN,AS),GETFILE.
.*------------NO FILE, SO GET TAPE
RETURN,TAPE2.
.*------------CHECK FOR USER-SPECIFIED TAPE.
IFE,$TAPENUM$.NE.$$,GETOWN.
LABEL,TAPE2,R,D=HD,L=PUJA_OCNBASN,VSN=TAPENUM.
COPYBF,TAPE2,DATIN.
SKIP,GETTAPE.
ENDIF,GETOWN.
.*----------------ATLARC
IFE,$OCNBASN$.EQ.$ATLARC$,DOATLARC.
LABEL,TAPE2,R,D=HD,L=PUJA_OCNBASN,VSN=1346.
COPYBF,TAPE2,DATIN.
SKIP,GETTAPE.
EXIT.
UNLOAD,TAPE2.
LABEL,TAPE2,R,D=HD,L=PUJA_OCNBASN,VSN=1307.
COPYBF,TAPE2,DATIN.
SKIP,GETTAPE.
ENDIF,DOATLARC.
.*----------------CARIB
IFE,$OCNBASN$.EQ.$CARIB$,DOCARIB.
LABEL,TAPE2,R,D=HD,L=PUJA_OCNBASN,VSN=1313.
COPYBF,TAPE2,DATIN.
SKIP,GETTAPE.
EXIT.
```

```
UNLOAD,TAPE2.
LABEL,TAPE2,R,D=HD,L=PUJA_OCNBASN,VSN=1222.
COPYBF,TAPE2,DATIN.
SKIP,GETTAPE.
ENDIF,DOCARIB.
.*----------------CENATL
IFE,$OCNBASN$.EQ.$CENATL$,DOCENATL.
LABEL,TAPE2,R,D=HD,L=PUJA_OCNBASN,VSN=1499.
COPYBF,TAPE2,DATIN.
SKIP,GETTAPE.
EXIT.
UNLOAD,TAPE2.
LABEL,TAPE2,R,D=HD,L=PUJA_OCNBASN,VSN=1495.
COPYBF,TAPE2,DATIN.
SKIP,GETTAPE.
ENDIF,DOCENATL.
.*----------------CENPAC
IFE,$OCNBASN$.EQ.$CENPAC$,DOCENPAC.
LABEL,TAPE2,R,D=HD,L=PUJA_OCNBASN,VSN=1326.
COPYBF,TAPE2,DATIN.
SKIP,GETTAPE.
EXIT.
UNLOAD,TAPE2.
LABEL,TAPE2,R,D=HD,L=PUJA_OCNBASN,VSN=1212.
COPYBF,TAPE2,DATIN.
SKIP,GETTAPE.
ENDIF,DOCENPAC.
.*----------------INDIAN
IFE,$OCNBASN$.EQ.$INDIAN$,DOINDIAN.
LABEL,TAPE2,R,D=HD,L=PUJA_OCNBASN,VSN=1228.
COPYBF,TAPE2,DATIN.
SKIP,GETTAPE.
EXIT.
```

```
UNLOAD,TAPE2.
LABEL,TAPE2,R,D=HD,L=PUJA_OCNBASN,VSN=1496.
COPYBF,TAPE2,DATIN.
SKIP,GETTAPE.
ENDIF,DOINDIAN.
.*----------------MEDSEA
IFE,$OCNBASN$.EQ.$MEDSEA$,DOMEDSEA.
LABEL,TAPE2,R,D=HD,L=PUJA_OCNBASN,VSN=1309.
COPYBF,TAPE2,DATIN.
SKIP,GETTAPE.
EXIT.
UNLOAD,TAPE2.
LABEL,TAPE2,R,D=HD,L=PUJA_OCNBASN,VSN=1357.
COPYBF,TAPE2,DATIN.
SKIP,GETTAPE.
ENDIF,DOMEDSEA.
.*----------------NORATL
IFE,$OCNBASN$.EQ.$NORATL$,DONORATL.
LABEL,TAPE2,R,D=HD,L=PUJA_OCNBASN,VSN=1493.
COPYBF,TAPE2,DATIN.
SKIP,GETTAPE.
EXIT.
UNLOAD,TAPE2.
LABEL,TAPE2,R,D=HD,L=PUJA_OCNBASN,VSN=1287.
COPYBF,TAPE2,DATIN.
SKIP,GETTAPE.
ENDIF,DONORATL.
.*----------------NORPAC
IFE,$OCNBASN$.EQ.$NORPAC$,DONORPAC.
LABEL,TAPE2,R,D=HD,L=PUJA_OCNBASN,VSN=1234.
COPYBF,TAPE2,DATIN.
SKIP,GETTAPE.
EXIT.
```

```
UNLOAD,TAPE2.
LABEL,TAPE2,R,D=HD,L=PUJA_OCNBASN,VSN=1355.
COPYBF,TAPE2,DATIN.
SKIP,GETTAPE.
ENDIF,DONORPAC.
.*----------------PHIOKJP
IFE,$OCNBASN$.EQ.$PHIOKJP$,DOPHIOKJP.
LABEL,TAPE2,R,D=HD,L=PUJA_OCNBASN,VSN=1213.
COPYBF,TAPE2,DATIN.
SKIP,GETTAPE.
EXIT.
UNLOAD,TAPE2.
LABEL,TAPE2,R,D=HD,L=PUJA_OCNBASN,VSN=1501.
COPYBF,TAPE2,DATIN.
SKIP,GETTAPE.
ENDIF,DOPHIOKJP.
.*----------------SATLPAC
IFE,$OCNBASN$.EQ.$SATLPAC$,DOSATLPAC.
LABEL,TAPE2,R,D=HD,L=PUJA_OCNBASN,VSN=1368.
COPYBF,TAPE2,DATIN.
SKIP,GETTAPE.
EXIT.
UNLOAD,TAPE2.
LABEL,TAPE2,R,D=HD,L=PUJA_OCNBASN,VSN=1334.
COPYBF,TAPE2,DATIN.
SKIP,GETTAPE.
ENDIF,DOSATLPAC.
.*-----------------------------------
COMMENT.
COMMENT. ****************************************** ERROR
COMMENT. SPECIFIED OCEAN BASIN IS NOT AVAILABLE.
COMMENT. CHECK YOUR BEGIN CARD.
COMMENT.
```

```
REVERT,ABORT.
.*
.*-----------------------------------
.*
ENDIF,GETTAPE.
UNLOAD,TAPE2.
.*
ENDIF,GETFILE.
.*
REVERT.
```


ND
DATE